XMM-Newton CCF Release Note

XMM-CCF-REL-270

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 _0033.CCF	2010-09-02T18:20:17		OFFSET_CCD2 OFFSET_CCD4		NO
EMOS2_DARKFRAME _0031.CCF	2010-09-02T18:20:17		OFFSET_CCD4 OFFSET_CCD6 OFFSET_CCD7		NO

2 Changes

The OFFSET blocks in the DARKFRAME CCFs reflect the uploaded MOS fixed offset tables.

Analysis of MOS background maps shows a continued decrease in background for several MOS1 and MOS2 CCDs by ~ 1 ADU per year. Periodically the uploaded MOS offset tables are revised so as to bring the offset in line with the background measured in the background maps. In this instance, the uploaded FF-mode fixed column offsets for MOS1 CCDs 2 and 4, and MOS2 CCDs 4, 6 and 7 have been lowered by 1 ADU.

3 Scientific Impact and Estimated Quality

Lowering of the overall offset level for the CCDs mentioned above will restore the fixed offset to the level of the actual CCD offset. Too high offsets would result in the loss of events (or partial event charge) below threshold, whereas too low offsets would increase noise above threshold, potentially creating false events or adding charge to real events.
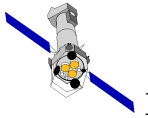
Note that the values in the OFFSET extensions of the DARKFRAME CCFs are *not* used to determine the E1 event energies; this is already done on board in the EDU. The main reason for reflecting the on board offset values in the DARKFRAME CCFs is correctly to determine the *reconstructed* event energies, for which knowledge of the contemporary on board offsets is required. Reconstructed event energies of 4095 ADU (so-called truncated events) can be useful in e.g. flare screening.

4   Expected Updates

The background of all CCDs changes in time and will need to be compensated through changes of the fixed offsets. These will have to be reflected in the OFFSET extensions of the DARKFRAME CCFs.

5   Test Procedures and Results

Correct functionality tested with `cifbuild` and `emproc` (SAS version 10.0.0). 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.