XMM-Newton CCF Release Note

XMM-CCF-REL-362

EPIC MOS Fixed Offset Tables

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1 CCF Components

Name of CCF	VALDATE	EVALDATE	Blocks Changed	XSCS Flag
EMOS1_DARKFRAME_0037.CCF	2018-12-05T03:19:34		OFFSET_CCD1 OFFSET_CCD2 OFFSET_CCD5 OFFSET_CCD7	NO
EMOS2_DARKFRAME_0033.CCF	2018-12-05T03:19:34		OFFSET_CCD3 OFFSET_CCD5 OFFSET_CCD6 OFFSET_CCD7	NO

2 Changes

Column 436 in MOS1 CCD2 is producing a large number of spurious events, likely due to evolving characteristics following damage sustained in the 11 December 2012 impact event. The main objective of the latest MOS fixed offset tables is to suppress this noise through a suitable modification of the respective column offset.

As additional objective, the new offset tables also address the canonical drift in background by lowering the column offsets for the following CCDs:

MOS	CCD	Mode	Offset Change (ADU)
1	1	LW	-1
1	5	FF	-1
1	7	FF	-2
2	3	FF	-1
2	5	FF	-1
2	6	FF	-1
2	7	FF	-1

This set of CCFs reflect these modifications to the uploaded MOS fixed offset tables, which were implemented as of revolution 3478.

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 the effects of the CCD damage evolve, other MOS1 offset values may require modification.

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

5   Test Procedures and Results

Correct functionality tested with `cifbuild` and `emproc` (SAS version 17.0). 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.