

XMM-Newton CCF Release Note

XMM-CCF-REL-0327

RGS Offsets - Update of ADUCONV CCFs

C. Gabriel

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1 CCF components

Name of CCF	VALDATE	EVALDATE	Blocks changed	XSCS flag
RGS2_ADUCONV_0029	2007-08-17T02:00:00		OFFSET_GAIN	NO
RGS2_ADUCONV_0030	2010-01-01T00:00:00		OFFSET_GAIN	NO
RGS2_ADUCONV_0031	2011-01-01T00:00:00		OFFSET_GAIN	NO
RGS2_ADUCONV_0032	2013-01-01T00:00:00		OFFSET_GAIN	NO

2 Changes

This release is necessary due to wrong RGS2 average CCD Offset values for the D sides in several calibration files. These are the ones corresponding to the whole period after RGS2 has started to be operated in single readout node mode. The RGS2 ADUCONV CCFs 0029 to 0032 replace the issues 0025 to 0028. They are identical except for the D offset values, which have been set to the same values of the corresponding C sides.

Despite the fact that after the mentioned operative change no RGS2 CCD is read out via the second readout node, the nomenclature "D side" is still applied to all values on the right half of the CCDs. Therefore, the subtraction of the mean offset value for that half of each CCD is now correct with the new CCF files. Actually the default subtraction steered by the SAS processing metatask 'rgsproc' (and performed by 'rgsenergy'), is not done with the mean values contained in the ADUCONV files, but using the RGS Offset files contained in the ODF. Only in case 'rgsenergy' is called with "withdiagoffset=NO" those mean offset values present in the RGS ADUCONV CCF get used.

The mean offset values of right and left side of each CCD in the RGS2 data are very close to each other, and they show little variation with time. For simplicity every value on the "D side" has been set identical to the corresponding value on the "C side".



3 Analysis

Due to a mistake in the CCF derivation procedures, correct RGS2 mean offset values per CCD for the D side (as derived for RGS2_ADUCONV_0024, with a start of validity 2007-08-17T02:00:00, corresponding to the start of single readout node operations, see the corresponding release notes <http://xmm2.esac.esa.int/docs/documents/CAL-SRN-0240-1-1.ps.gz>) have been overwritten. Older values, as derived for the double readout node operations, have been put instead, when updating gains and CTI values in September 2012 and July 2014, covering the whole period in time until now through 4 calibration files (<http://xmm2.esac.esa.int/docs/documents/CAL-SRN-0289-2-1.ps.gz> and <http://xmm2.esac.esa.int/docs/documents/CAL-SRN-0319-1-0.pdf>). The 4 calibration files to be released now contain exactly the same information as those, except for the RGS2 mean offset values on the D side.

4 Scientific Impact of this Update

Using the new files the non-default offset subtraction (call to 'rgsenergy' with "withdiagoffset=NO") will avoid a clear incorrect subtraction for the right halves of RGS2 CCDs.

5 Estimated Scientific Quality

6 Expected Updates

The slow variation of the OFFSET values could lead to an update of these values at some point. For the last 8 years they have been pretty stable though.

7 Test procedures

General checks:

- use the FTOOLS 'fv' for file inspection. Every file should contain 2 binary extensions (ADUCOFF and OFFSET_GAIN). The offset values of C and D side should be identical for each CCD.
- use the FTOOLS 'fdiff' for comparing RGS2_ADUCONV_0025 with -_0029, -_0026 with -_0030, _0027 with -_0031, and _0028 with -_0032. They should be identical except for the D-side mean offset values.



8 Summary of the test results

The fits viewer fv was used to inspect all 4 CCF files, wrt their structure, validity dates and contents of the two extensions. Everything OK.

The SAS task cifbuild was run several times using data corresponding to periods covered with the SAS.CCFPATH environment variable set to the public area in one case and including a directory with the new files in the other case to check the correct selections. Selections were correctly done.

The differences between the original files with the wrong offsets and the new ones were as expected.