XMM-Newton CCF Release Note

XMM-CCF-REL-133

EPIC MOS gain

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1 CCF components

Name of CCF	VALDATE (start of val. period)	EVALDATE (end of validity period)	List of Blocks changed	CAL VERS.	XSCS flag
EMOS1_ADUCONV_0019	2002-11-07T05:00:01		OFFSET_GAIN		NO
EMOS2_ADUCONV_0019	2002-11-07T05:00:01		OFFSET_GAIN		NO

2 Changes

A new ADUCONV CCF has been generated from the values derived by Leicester after the cooling of the cameras.

3 Scientific Impact of this Update

The update takes the change in gain of the cold MOS cameras into account. In combination with the EMOS*_CTI_0015.CCF there is no scientific impact on the data despite of the positive fact, that the ernergy resolution with the cold camera has improved by a factor of 0.85. See figure 1 and figure 2.

4 Estimated Scientific Quality

The CCF takes the post cooling condition for the gain into account. Figure 3 shows corrected MOS1 pre- and post-cooling spectra. There's no signifcant shift in the observed line features or evidence

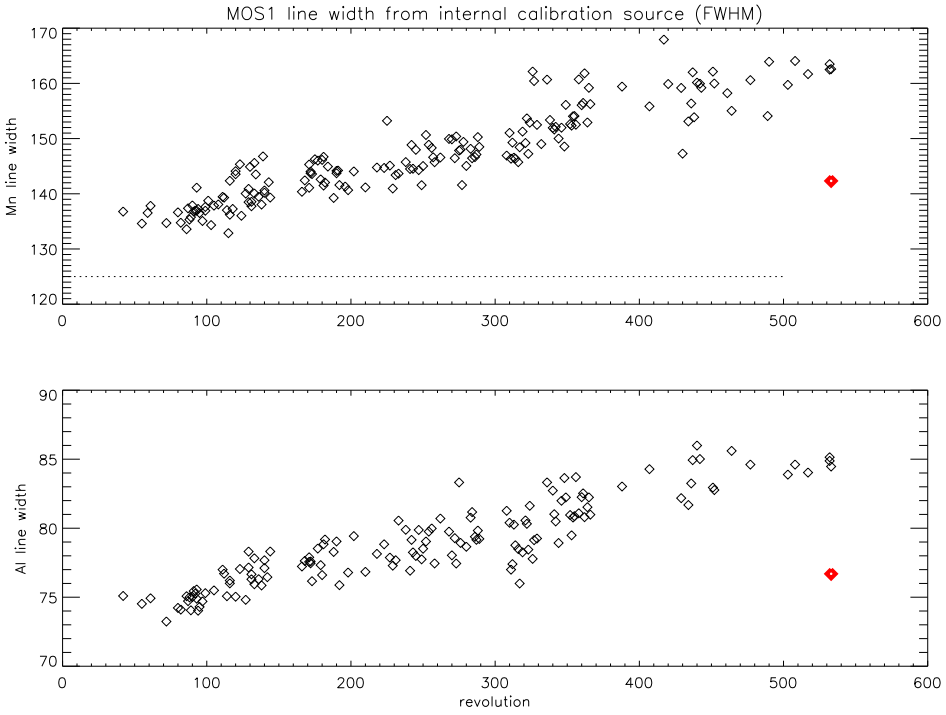

Figure 1: Mn and Al SAS reconstructed line width for MOS1 CCD1 with the new ADUCONV CCFs 15-19, for pattern 0, since launch. The red dot shows the situation post cooling

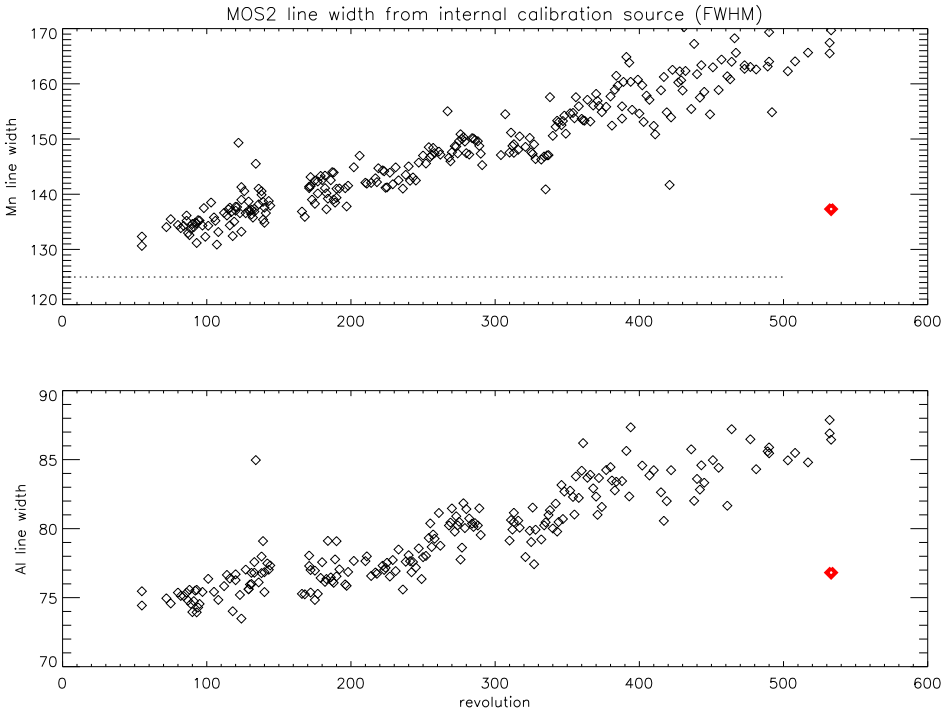

Figure 2: Mn and Al SAS reconstructed line width for MOS2 CCD1 with the new ADUCONV CCFs 15-19, for pattern 0, since launch. The red dot shows the situation post cooling

for contamination.

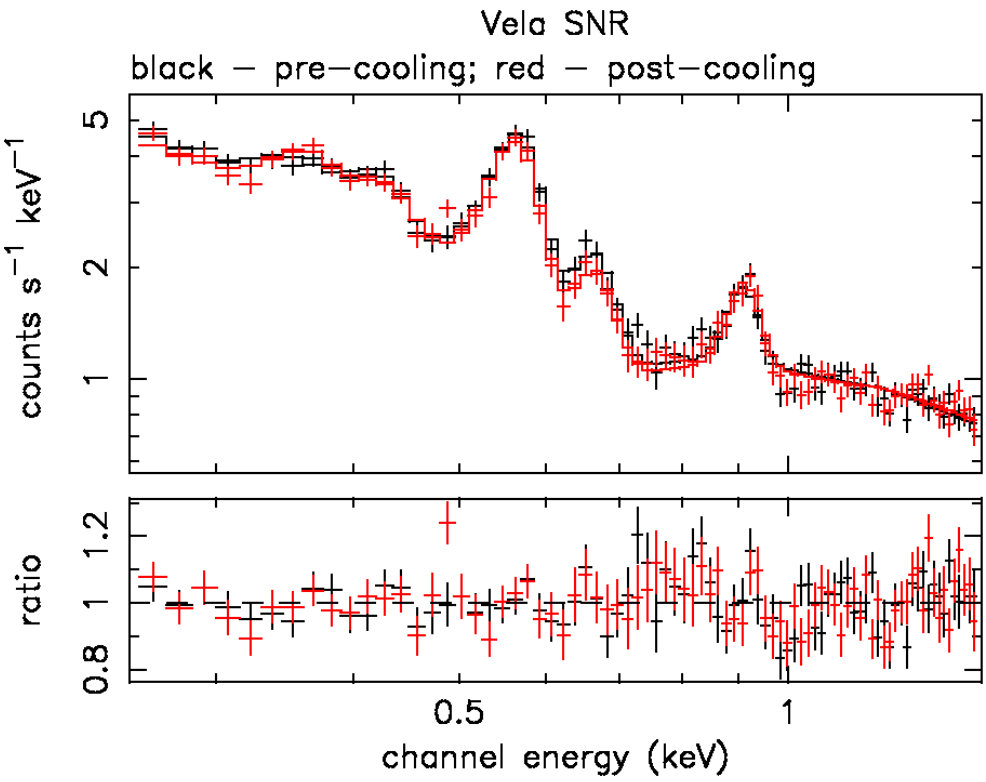

Figure 3: Vela SNR spectra of the MOS1 camera pre and post cooling. black:pre cooling, red:post cooling

5 Test procedures & results

The new ADUCONV CCFs have been tested with the Development Track (DT) version of the SAS at VilSpa using the observation 0142860201 of rev. 536 for functional test. Furthermore Leicester performed tests with the Development Track (DT) version of the SAS on the observations:

0156960101: Vela SNR in rev. 533 (pre cooling)

0156960301: Vela SNR in rev. 534 (post cooling)

In adition the new ADUCONV CCFs 12-19 have been tested with the Development Track (DT) version of the SAS at VilSpa using all available CALCLOSED observations. The reconstructed line position for the CALCLOSED observation 0156960501 from revolution 533 (cold camera) is at the correct position for Mn and Al for both cameras. See figure 4 and figure 5.

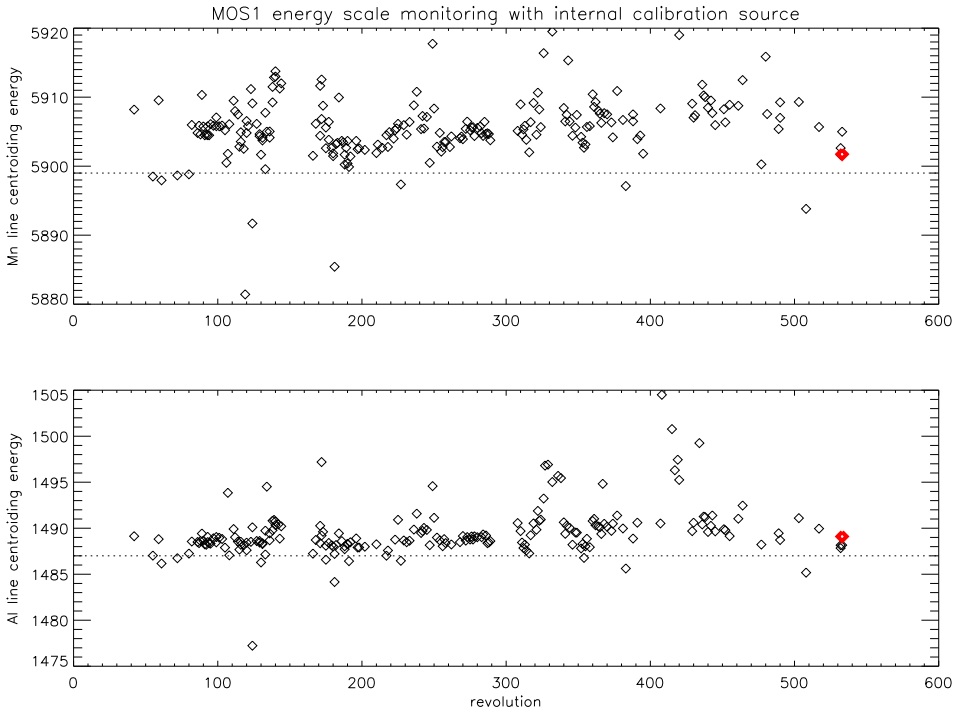

Figure 4: Mn and Al SAS reconstructed line positions for MOS1 CCD1 with the new ADUCONV CCFs 15-19, for pattern 0, since launch. The red dot shows the situation post cooling

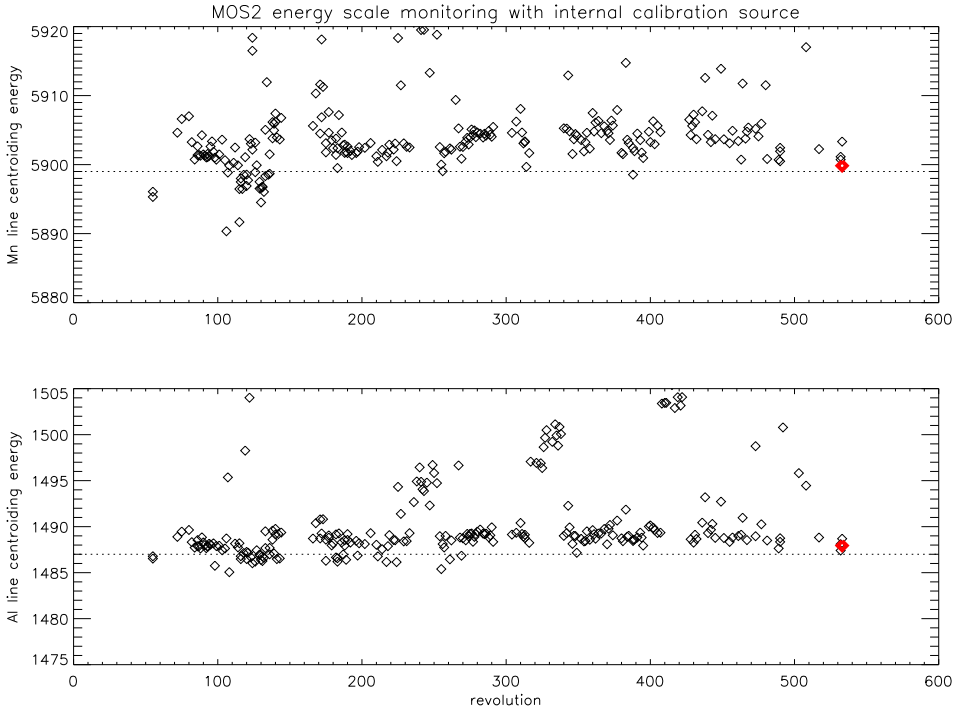

Figure 5: Mn and Al SAS reconstructed line positions for MOS2 CCD1 with the new ADUCONV CCFs 15-19 , for pattern 0, since launch. The red dot shows the situation post cooling

6 Expected Updates

The ADUCONV CCFs could be tuned further to limit the slight over-correction (see also XMM-CCF-REL-125).