

XMM-Newton CCF Release Note

XMM-CCF-REL-287

EPIC Filter Transmission

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1 CCF Components

Name of CCF	VALDATE	EVALDATE	Blocks Changed	XSCS Flag
EMOS1_FILTERTRANSX_0014	1998-01-01T00:00:00		FILTER-OPEN FILTER-CALTHIN1 FILTER-CALTHIN2 FILTER-CALMEDIUM FILTER-CALTHICK FILTER-CALOPEN FILTER-CALCLOSED	NO NO NO NO NO NO NO
EMOS2_FILTERTRANSX_0014	1998-01-01T00:00:00		FILTER-OPEN FILTER-CALTHIN1 FILTER-CALTHIN2 FILTER-CALMEDIUM FILTER-CALTHICK FILTER-CALOPEN FILTER-CALCLOSED	NO NO NO NO NO NO NO
EPN_FILTERTRANSX_0018	2000-02-01T00:00:00		FILTER-OPEN FILTER-CALTHIN1 FILTER-CALTHIN2 FILTER-CALMEDIUM FILTER-CALTHICK FILTER-CALOPEN FILTER-CALCLOSED	NO NO NO NO NO NO NO

2 Changes

For each of the EPIC FILTERTRANSX CCFs, the main change consists of the addition of six new blocks which contain transmission data for various combinations of filter plus calibration source. The new CCF issues thus allow SAS tasks correctly to handle exposures performed with these filter configurations (which are primarily used for calibration purposes). For each instrument, the

transmission values used in these filter-plus-calsource combinations are identical to those of the respective science filter (e.g., the EPIC-pn FILTER-CALTHIN1 and FILTER-THIN1 transmissions are identical, etc.). The FILTER-CALCLOSED transmission values are identical to those of the FILTER-OPEN blocks.

A minor change was made to the FILTER-OPEN blocks: a few transmission values which previously were erroneously set to slightly greater than unity (due to numerical rounding) have now been corrected.

3 Estimated Scientific Quality

The filter-plus-calsource configuration is obtained by slightly stepping the filter wheel from the nominal science filter position to allow the calibration source to illuminate the detector. Hence, the filter used in the two configurations is identical. However, as the filter orientation changes between configurations any spatial variations in filter properties may affect the overall transmission. Owing to the small filter displacement, and the spatial homogeneity of especially the Thin and Medium Filters, these effects are expected to be small.

4 Expected Updates

As more calibration data is analysed there may be further modifications to the transmission curves. There is provision for inclusion of spatial variations which may improve the Thick Filter transmissions in particular.

5 Test Procedures and Summary of the Test Results

Functional testing with `calview`, `cifbuild` and `epproc`, `arfgn` and `rmfgen`.

Analysis of CALCLOSED exposures with the previous CCF issue resulted in errors such as (for `rmfgen`):

```
** rmfgen: error (blockNotFound), Could not find block with qualified name
'/ccf/pub/EPN_FILTERTRANSX_0014.CCF:FILTER-CALCLOSED' in dataset with name
'/ccf/pub/EPN_FILTERTRANSX_0014.CCF'.
```

It has been verified that with the new CCF issues these errors no longer occur.

Verification that the added blocks do not affect the science filter configurations FILTER-THIN1, FILTER-MEDIUM and FILTER-THICK: effective areas determined by `arfgn` with the new CCFs are identical to those produced using the previous issue.