

Description of the Filter

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1 Introduction

This document explains the operation of the filter as it is generated by MMALPHA.

2 The Outmost Component

```
system fir      (x : {i | 0<=i<=100} of integer[S,16];
                 w : {k | 1<=k<=33} of integer[S,16])
  returns (y : {i | 33<=i<=100} of integer[S,32]);
var
  wXMirr1 : {t,p | 0<=t<=32; p=-1} of integer[S,16];
  xXMirr1 : {t,p | 0<=t<=99; p=-1} of integer[S,16];
  Y : {t,p | p+35<=t<=p+102; 0<=p<=33} of integer[S,32];
let
  wXMirr1[t,p] = w[-t+33];
  xXMirr1[t,p] = x[t];
  y[i] = Y[i+35,33];
  use firModule[] (wXMirr1, xXMirr1) returns (Y) ;
tel;
```

Its inputs are x , w and its output is y . Coefficients x are read in variable $xXMirr1[t,p]$, and we have $xXMirr1[t,p] = x[t]$, for $t = 0, 1, \dots$, which means that the x coefficients are input at time corresponding to their indexes.

Coefficients $w[k]$ are read in variable $TSep1[t,p]$ for $1 \leq p \leq 33$, and we have $TSep1[t,p] = w[t-35]$. Thus, all coefficients w are read simultaneously in all processors... which is not good.