

Application Note 51

“Super Black” Work Around

The ‘super black’ application note explains how to produce a YUV output, from a composite NTSC/M video signal, with Y values between the pedestal level and the blanking level. For PAL and NTSC-EIA, i.e. for video signals without pedestal this work around is not necessary for normal operation. In the case of PAL and NTSC-EIA the Y values below the blanking level are processed separately.

The luma data selected by YMUX[1:0] register bits, is shown as ‘combed luma data’ in the following block diagram. A separate output from the low pass filter is sampled by the clamp pulse, at a time fixed by the STB register value. This clamp signal is then subtracted from the luma signal to remove the mixed sync portion of the signal as shown below, to produce ‘Y’.

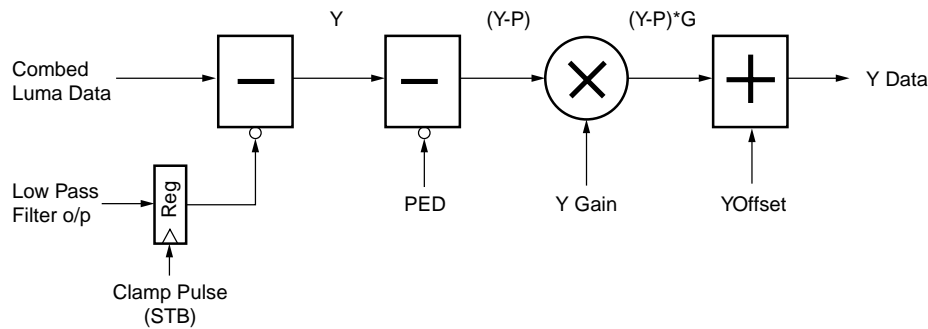
The resulting video signal is then processed as follows:

$$Y \text{ data} = [(Y-P)*G] + Y\text{offset}$$

However if $[P*G]$ is less than $Y\text{offset}$, then this can be rewritten as:

$$Y \text{ data} = [Y*G] + [Y\text{offset} - (P*G)]$$

In which case the PED register is set to zero, and modified $Y\text{offset}$ term can be calculated by subtracting the product of the programmed luma gain $[G]$ and predicted pedestal value $[P]$ from the required luma offset $[Y\text{offset}]$.



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