

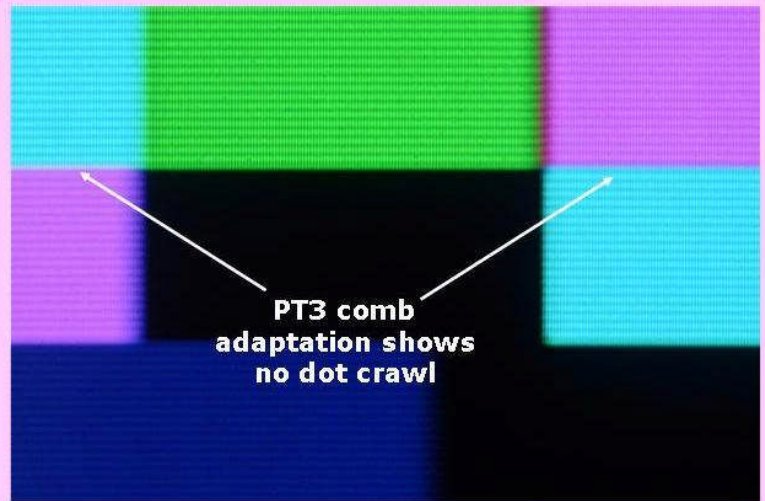
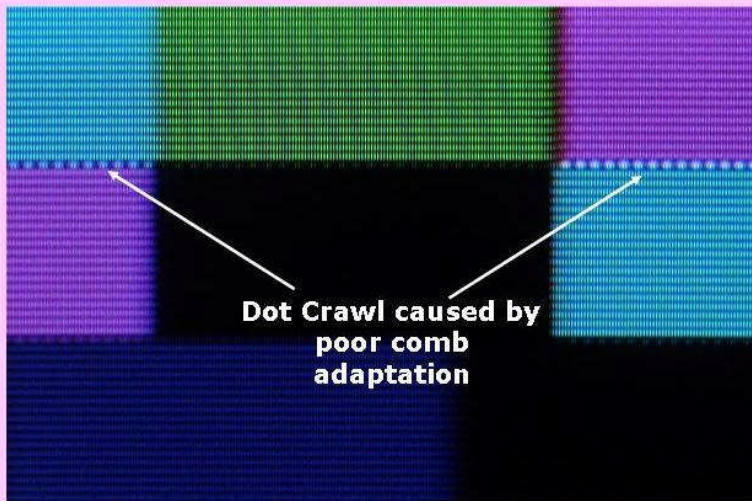
PT3

NTSC Video decoder IP core for FPGAs

PT3 is a high quality, adaptive 3-line comb, NTSC video decoder available as an area efficient IP core for FPGAs.

The decoder accepts 10-bit composite line locked video sampled at 27MHz together with synchronising signals and clock, (for example from the Analog Devices AD9981 ADC). The decoder is a complementary design. The colour burst from the input video is used to phase lock the subcarrier oscillator which then addresses a sine and cosine LUT. These waveforms are used to demodulate the colour component of the composite waveform. The resulting U and V colour components are then low pass filtered and applied to a 3-line adaptive comb filter. The chrominance comb adapts between a notch filter and the line comb based on the chrominance and luminance amplitude differences across the comb aperture. The resulting combed U and V components provide the colour component outputs where they are amplified and scaled before being formatted to a 10-bit BT656 output. The combed U and V are also remodulated onto the colour subcarrier and subtracted from the composite to produce a combed luminance output which is also scaled and formatted into the BT656 stream.

Control and status registers are written to and read from using a conventional 8 bit wide microprocessor interface.

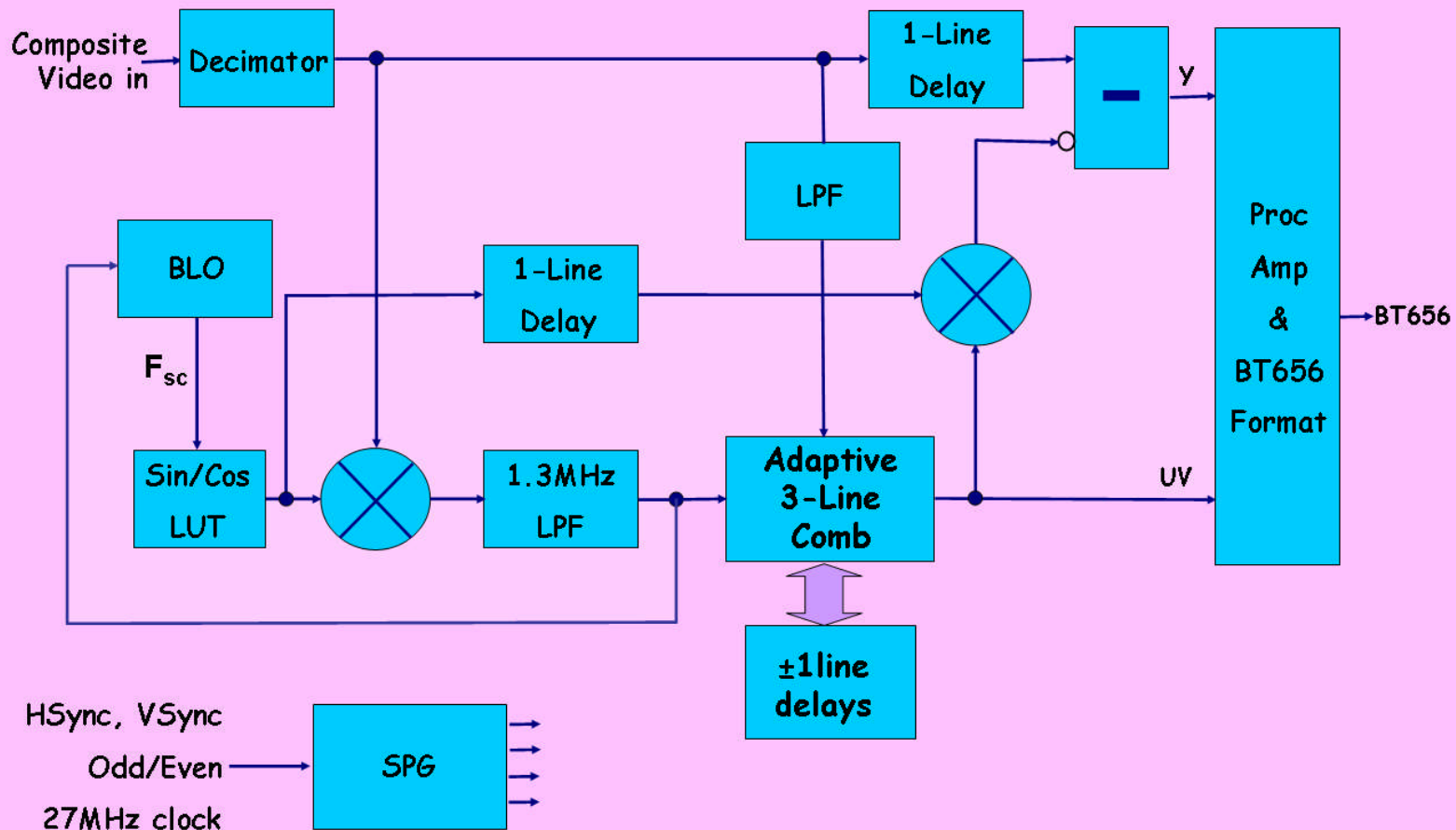


Resources required by the NTSC decoder are low allowing the core to be incorporated into the smallest of FPGAs or for multiple cores to be added. However despite the small IP core size, the decoder offers exceptional performance as shown by the lack of dot crawl in the above photograph.

| Logic Elements | Memory Bits | M4K blocks | 9x9 Multipliers | 18x18 multipliers |
|----------------|-------------|------------|-----------------|-------------------|
| 3479 | 56758 | 18 | 18 | 9 |

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PT3 Block Diagram

SingMai Electronics is a Canadian start-up company that will be utilizing its thirty years of electronics design expertise to provide customers with innovative and cost-effective solutions to their video and audio processing requirements.

SingMai Electronics

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