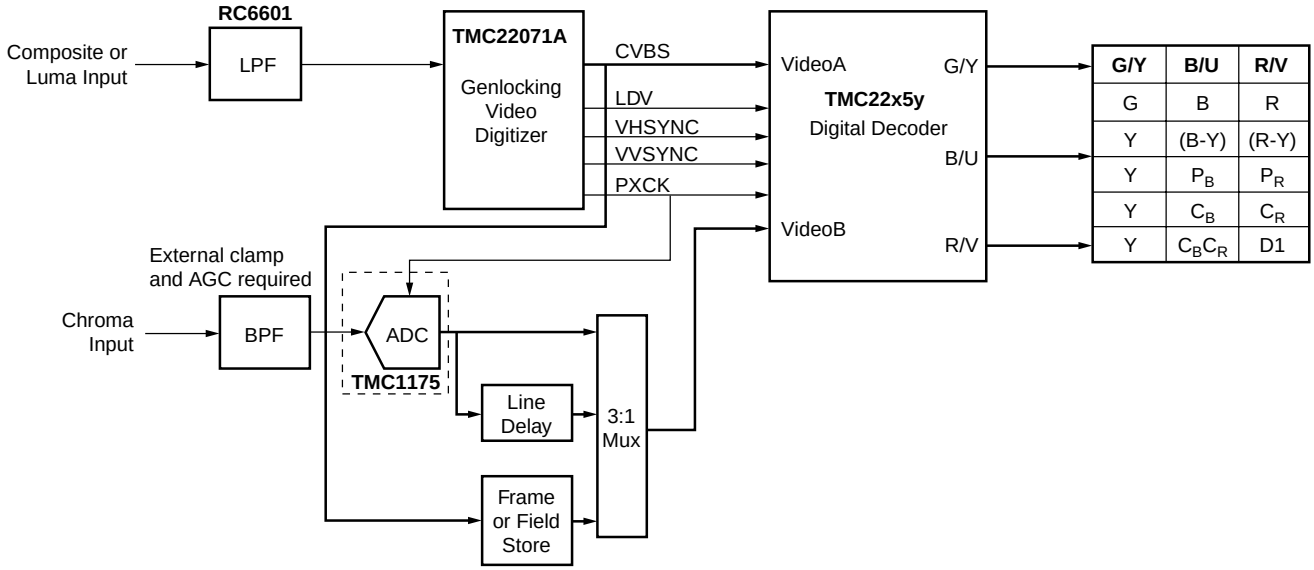
Application Note 56

Conversion of NTSC Composite Video into the D1 Component Format, Using an Adaptive 3 Line Chroma Comb Filter Decoder.

The composite video, shown in Figure 1, is digitized by the TMC22071A which also produces the 27MHz line locked clock, and the HSYNC and VSYNCV signals. In other systems the TMC22071A can be replaced by a separate ADC, analog clamp, analog AGC, and horizontal phase locked loop circuit. The RC6601 provides the antialiasing filter before the TMC22071A, if a separate ADC and a oversampling filter, such as the TMC2242x, is used the RC6100 could be replaced with a simple low pass filter. The external memory and second ADC are not required for this application.

The TMC22x5y, configured as an adaptive chroma comb filter decoder, decodes the NTSC composite video input into a D1 component output. The register and XLUT register maps are configured to provide a compromise between the zone plate test pattern, SMPTE color bars, and 'real' video images.



G/Y	B/U	R/V
G	B	R
Y	(B-Y)	(R-Y)
Y	P_B	P_R
Y	C_B	C_R
Y	C_BC_R	D1

Figure 1: Multipurpose decoder block diagram

Register map:

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0-	C0	01	00	A1	20	00	0C	10	40	40	34	00	80	14	24	09
1-	5A	47	35	D2	23	00	01	00	15	35	3D	51	C6	01	00	00
2-	40	F8	E0	43	00	00	00	00	00	00	00	00	00	00	00	00
3-	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

XLUT table:

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0-	1F	1F	1F	13	08	05	05	05	1F	1F	1F	13	08	05	05	05
1-	1F	1F	12	0A	05	05	05	05	1F	1E	0F	05	05	05	05	05
2-	1D	1C	05	05	05	05	05	05	0A	07	05	05	05	05	05	05
3-	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
4-	1F	1C	05	05	05	05	05	05	1F	1C	05	05	05	05	05	05
5-	1D	1B	05	05	05	05	05	05	1C	18	05	05	05	05	05	05
6-	12	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
7-	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
8-	1F	05	05	05	05	05	05	05	1F	1C	04	04	05	05	05	05
9-	1D	1B	04	04	05	05	05	05	1C	1B	04	04	05	05	05	05
A-	12	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
B-	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
C-	1F	05	05	05	05	05	05	05	1F	1C	05	05	05	05	05	05
D-	1D	05	05	05	05	05	05	05	05	05	05	05	05	01	01	01
E-	05	05	05	05	05	01	01	01	05	05	05	05	05	01	01	01
F-	05	05	05	05	05	01	01	01	05	05	05	05	05	01	01	01