Super Pattern Graphics Mode

The proposed new mode for the VDP is more flexible and versitile than any of the existing modes, yet requires only very minor modifications to the VDP. It gives more flexible display capability than the normal pattern mode with full resolution capability and gives better color capability than the multicolor mode. (ie gives a better display than the other 2 modes combined). This mode makes for very straight forward memory mapping of the display and may in fact give high enough color resolution and be straight forward enough so that computers could directly translate a T.V. camera's image for VDP display; (Note this capability can greatly reduce the ammount of hand work necessary to generate a display image for game display and can eventually be a home computer option, since with the advent of Video Tape recorders color T.V. camera's will be in the home.

In general, the current display modes do not exercise the full display capability the way this new mode will. This new mode requires NO modifications to any display logic and does not change any basic timings on the VDP. The Super Pattern mode nearly makes minor modifications in how pattern addresses are formed and requires less than 50 transistors including the control flag, yet these minor modification have a great screen effect.

This new display mode is not exactly copyable by a low cost VDP with on board color table and fewer memory accesses, because the new mode make use of the current VDPs memory cyles to access up to 6K of color table; however, the low cost VDP could subset the feature very easily by assuming a memory mapped display (the most likely way that use the new feture) thus the NAME fetch can be replaced by an off chip color table fetch and the same net screen effect achieved. The two VDPs could be software compatible since the low cost VDP will be a subset of

the original VDP's capability; By not using the added feature of NAME mapping in the original VDP software, the low cost VDP will work exactly as per the original VDP.

Description of Super Pattern Mode.

In the super pattern mode 3 consecutive NAME TABLES are used so that every 8 by 8 cell on the screen can have a different NAME. There ARE 768 cells on the screen (32 Rows by 24 columns). In the current Pattern mode there can only be 256 diffent shapes to fill the 768 cell, thus shapes must be used over an average of 3 times, the SUPER mode eliminates this restriction. The current

Description of the Super Pattern Mode

In the current pattern mode there are 768 cells (24 Row by 32 columns) on the screen, and yet only 256 NAME's are possible, thus shapes must be used over an average of three times. Also, the pattern mode restricts colors options by having every 8 NAMEs use the same 2 colors and each 8X8 cell on the sceen can have only two colors. In some applications these color and shape restrictions can be severe and in general cause headaches in triying to generate complex displays. The Super Pattern Mode eliminates these restrictions. First the super Mode Breaks the 768 cells into 3 groups (top, middle, and bottom of the screen) and each group number (2 bits from the vertical line counter) is concatonated to the front of the NAME to give 768 different NAMES (one possible for each cell). Note that by ordering the NAME table the screen can now be memory mapped which was not possible before. Additionally, in the Super Mode, each line of a pattern descripter can have 2 different colors (as opposed to 2 colors per 8 patterns currently) and thus each 8X8 square can have all sixteen colors

in it at the same time. Note the best the multi-color mode can produce is 4 different colors on an 8X8 Region at a time and the super mode gives dot by dot programability. The net effect is shown below in an example of an 8X8 cell.

EXAMPLE OF Best Posible 8X8 Pixel display
(HEX Color Representation Given)

A	5	A	5	A	5	5	A
5	A	5	A	5	5	A	A
A	5	A	5	5	A	A	5
5	A	5	5	A	A	5	A
A	5	5	A	A	5	A	5
5	5	A	A	5	A	5	A
A	A	A	5	A	5	A	5
A	A	5	A	5	A	5	A

A	A	A	A	3	3	3	3
A	A	A	A	3	3	3	3
A	A	A	A	3	3	3	3
A	A	A	A	3	3	3	3
5	5	5	5	C	C	C	C
5	5	5	5	C	C	C	C
5	5	5	5	C	C	C	C
5	5	5	5	C	C	C	C

A	5	A	5	A	5	5	A
3	7	7	3	7	3	7	3
6	0	6	0	6	6	6	6
F	B	B	1	1	1	1	B
2	4	4	4	2	2	2	4
8	F	F	8	8	8	F	8
E	9	9	E	E	9	9	E
C	4	4	4	4	4	4	4

PATTEN MODE
1) ONLY 2 COLORS Possible
2) Color Grapping Restrictive
3) Must Repeat Shapes an average of 3 TIMES

Multicolor Mode
1) Very low Resolution

Super Mode
1) Requires up to 12K Memory

The only disadvantage of the Super mode is it requires up to 12 K of memory, but this is aways the price paid for detailed color graphics and less memory can be used at the programers option. The Super mode allows for shortening of the various tables used for display & thus has some subset modes that use less memory. This shortening is controllable by the CPU by values loaded into the table base register (this feature enhancement requires no hardware additions since it happens unless hardware is added to stop it).

Competive Comparison

Competitive Comparison.

The UDP appears to have superior object oriented graphics (sprites) and better high resolution with color capability, but the current UDP is one of the few parts than cannot have a memory mapped T.V. screens in a high resolution mode. Even for simpler parts such as the Motorola 6847 gives a two color high resolution memory map mode. The Super pattern graphics mode would give the UDP a very flexible and easy to use way to memory map the T.V. screen, and would give the UDP the best full color memory mapping capability of any existing part. Since memory mapped graphics is the most straight forward way to display pictorial information, this would give the UDP another clear advantage in display capability; more simply put, any display the competitor's part can great the UDP can do better with the super pattern graphics mode.