TO: ECDD   CHRIS VAN HEESWIJK
CC: MCPE   RON NORRIS/JOE YEAGER/MARK KISNER
FR: CADD   KARL GUTTAG

RE: MULTIPLE COLORS IN THE TEXT MODE WITH THE 9918

JOE YEAGER HAS RELAYED YOUR REQUEST ON THE ABOVE MENTIONED SUBJECT.
THE REASON THE TEXT MODE DOES NOT HAVE VARIABLE COLORS IS A SIMPLE
MATTER OF MATHEMATICS. FIRST OF ALL, IT SHOULD BE NOTED THAT THE
VDP IS CONSTANTLY FETCHING DATA FOR DISPLAY A SHORT TIME BEFORE
DISPLAYING IT. IN THE TIME IT TAKES TO DISPLAY 2 DOTS ON THE
SCREEN, THE VDP CAN MAKE ONE MEMORY FETCH; SO THAT IN THE GRAPHICS
MODES WHILE THE VDP DISPLAYS 8 DOTS HORIZONTALLY OF A PATTERN, IT
IS ALSO MAKING 4 MEMORY FETCHES IN ORDER TO BE READY TO DISPLAY
THE NEXT 8 DOTS; (1) THE NAME FETCH, (2) COLOR FETCH, (3)
GENERATOR FETCH (4) SHARED BETWEEN SPRITES AND THE CPU. IN THE TEXT
MODE THE DISPLAY PATTERN IS ONLY 6 DOTS WIDE (IN ORDER TO GET 40
PER LINE) THUS LEAVING ONLY 3. MEMORY ACCESSES BETWEEN NEEDING NEW
SHAPE INFORMATION; (1) NAME FETCH, (2) GENERATOR FETCH, (3) CPU
ACCESS WINDOW. AT THE TIME THE VDP WAS DESIGNED, IT WAS FELT THAT
THE CPU NEEDED TO GET TO DISPLAY, RAM FREQUENTLY, AND IN ORDER TO
GET MULTICOLORED TEXT, THE CPU WOULD ONLY GET TO DRAM DURING
HORIZONTAL AND VERTICAL RETRACE.

I AM BUSY ON ANOTHER PROJECT NOW, SO THAT THE TIME I HAVE TO SPEND
IS LIMITED ON THE VDP. GIVEN SOME EFFORT, IT MAY BE POSSIBLE TO GET
MULTICOLORED TEXT IF THE CPU ACCESS TO DISPLAY RAM IS LIMITED;
HOWEVER I CANNOT SAY WITHOUT FURTHER INVESTIGATION EXACTLY WHAT
THIS WOULD REQUIRE. (I DO KNOW THAT TO GET BOTH HIGH CPU ACCESS
RATES WITH NO DISPLAY "GLITCHES" AND MULTIPLE COLORED TEXT IS A NEW
SHIP).

IF THERE ARE ANY QUESTIONS, PLEASE CONTACT ME AT MY MSG ID OR
TELEPHONE 778-6365.

REGARDS,

KARL GUTTAG   CADD