The Eric Siegel EVS synthesizer

4/19/92 Jeff Schier

The EVS Video synthesizer contained many components of the Special Effects Generator, with the additions of a color encoder and free form patch matrix. Built in a BIC-VERO rack with front panel knobs and switches, a large horizontal plug matrix is present to patch together video effects. The patch panels were pulled from IBM style card sorters, with connections formed by min-banana plug cables in adorable colors. In the front of the patch panels are a row of 16 white flat rocker switches, arranged horizontally to resemble a piano keyboard. The matrix had 15 rows by 20 columns with various input and outputs scattered throughout the panel. The processing connections are carried back to the main rack unit. All voltages at the patch matrix were 1 Volt P-P allowing connection of any output to other inputs. The outputs of the modules are low impedance and can drive multiple inputs. The synthesizer box had provisions for two video input sources, and a duplicate set of video outputs.

In the rack of electronics sits circuit boards which :

1) A power supply for the modules

2) Three voltage controlled two in one out video mixers. These can switch at video rates, as well as mix the two video inputs depending on the control signal input.

3) A horizontally and a vertically locked sawtooth generator with a square and logarithmic waveform output. These can be used to form horizontal or vertical patterns for use as a video or control source. The oscillators can be independently voltage controlled and "unlocked" to the horizontal or vertical timing source, to cause the patterns to "wobble" horizontally or vertically.

4) A horizontal and vertically locked triangle/square waveform generator with logical combinations of the H and V patterns. This formed 4 basic patterns : A Horizontal bar, a Vertical bar, A square pattern formed from the "Anding" of the H and V bars, and a diamond pattern formed from the gating of the H and V triangle waveforms. All four output are available simultaneously at the patch panel. Size and position of the triangle/bars were from knobs on the front panel.

5) Dual voltage controlled oscillator/generators with dual video attenuators. The voltage controlled oscillators can be free running or locked to horizontal or vertical sync. The frequency of oscillation was selected through a rotary switch to switch the capacitive time constant. The video attenuators can linearly attenuate the input to output in response to the control input.

6) The output color encoder/colorizer. The main component of the Siegel colorizer is contained here. It is conventional "doubly balanced modulator", to perform the hue and saturation generation from the control inputs. In place of a conventional R-Y and B-Y inputs, dual inputs are present on both modulators for an inverting and non-inverted phase shifts. The first modulator axis is adjusted for orientation along the Red/-Blue (actual CYAN) axis, while the second modulator is set 90 degrees in quadrature on the green /-Magenta color axis. The modulators outputs are summed together and form the chrominance signal, and along with the color burst is run to output Proc Amp for combination into a composite video signal.

Substitution of luminance video with and without waveform ~~line~~
dulation helps to generate the unusual colorizing, with the hue and
turation changes set driven by the horizontal components of the controlling
veforms. The overdriving of the dual modulators with video signals has been
scribed by Eric Siegel as "Ultra-phase modulation" (quoted from Don Day)
The output of the colorizer goes to the Processing amplifier. The output
oc Amp, merged and cleaned up (blanked) the synthesized video to a form
at was video compatible. It is here that the burst, sync and blanking is
rmed and gated, and the luminance and chrominance combined. Knobs
re available to mix the Luma and Chroma proportions into the main video
tput. A dual set of outputs was present to drive a color monitor and video
pe recorder.