**LumaFix64 Rev. 1.2sp**

**Module Description**

# Preface

It is a known fact, that some digitals signals are interfering with the video output signals inside the VIC-II chip of the Commodore C64. This results in a typical vertical strip pattern in the monitor output of the C64. The main culprits are AEC and PHI0 (VIC-II pin 16 and 17).

This topic was discussed in the lemon64.com forum in December 2011 (<https://www.lemon64.com/forum/viewtopic.php?t=40570&start=0>), where the attempt to cancel out these interferences was mentioned, that was released by the user ikary\_01 in forum64.de in October 2010, called „C64-Streifenfix“ (<https://www.forum64.de/index.php?thread/39285-c64-bild-hat-leiche-vertikale-streifen/&s=b329abcb4ddda3e4efab6bcffade57ad2a5b7f33> & <https://sd2snes.de/~ikari/pics/> ).

This design is based on the eagle files LumaFix64v1.0\_B64W, that e5frog released in the lemon64.com forum March 7th, 2018. (<https://www.lemon64.com/forum/viewtopic.php?t=40570&start=375>)

# Functionality

The signals AEC and PHI0 are inverted, then attenuated by potentiometers (AEC & PHI0) and coupled into the S/LUM signal (VIC-II pin 15) via a small (47p) capacity). The potentiometers can be adjusted to minimize the interferences of the signals mentioned above.

Further on, the chrominance signal of the VIC-II chip has an amplitude, which is too high for most modern TVs, which results in a poor color quality. Many C64 video cables solve this issue by inserting a 330Ω resistor into the chrominance output signal. The LumaFix64 solves this issue with a pot (CHR) inserted in the signal. This pot can stay not populated and the cut pad CP1 can be closed instead.

# Revision History

## v1.0 B64W → v1.1sp

* The issue of the original eagle files with Eagle 9 was fixed
* The schematic was restructured
* The THT ICs and capacitors were left out
* The footprints of the socket, pin headers and pots were changed
* The inverter IC 74HCT14 has a 100n buffer cap
* The cut-pad CP1for bridging the CHR pot was added, a 330Ω resistor (0603) can be placed on this cut-pad for having a fix resistor in the chrominance output.
* The width of the board was reduced to 25.94mm
* The layout is new

## v1.1sp → v1.2sp

* PCB Revision
* R1 is new to replace the CHR pot if not required