Commodore 64 S-Video Bypass/RF Replacement

Installation Guide Rev 1.0

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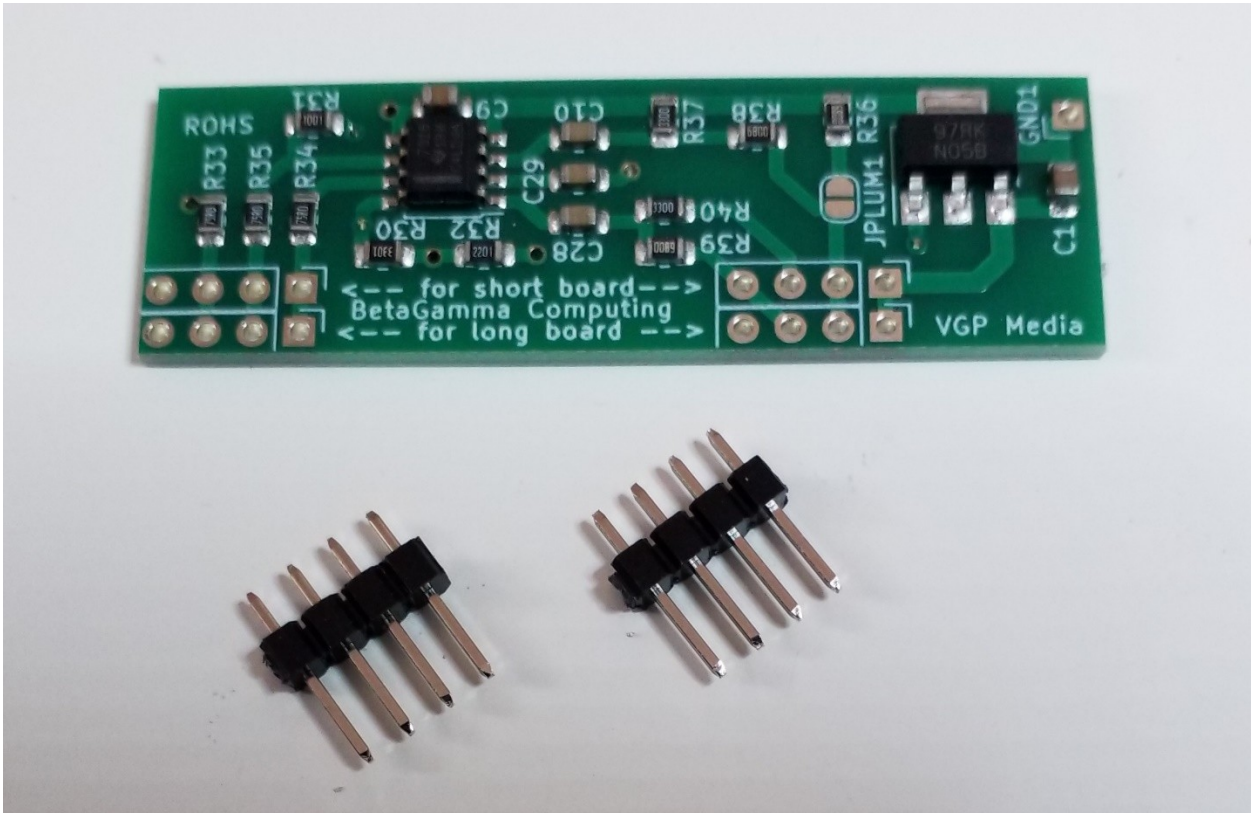

This installation guide describes the installation of the open source C0pperdragon RF modulator replacement and amplifier board for the Commodore 64 microcomputer system.

Scope of Installation

The Commodore C4 is fitted with a large RF modulator pack, this serves several purposes.

1. It amplifies and filters the luminance and chrominance signals output from the VIC II chip and provides near S-Video characteristic outputs on the main 8 PIN output DIN A/V Socket.

2. It produces a composite video signal which is also fed to the main 8 PIN output DIN A/V socket, along with monaural audio.

3. It produces an RF Modulated signal Suitable for UHF television receivers, PAL I (UK) and PAL BG (EU) are selected by a small slide switch accessible from the rear of the C64.

The RF Modulator is now very old and produces a lot of noise. Due to aged components with limited bandwidth it can interfere with the S-Video and composite AV outputs.

The C0pperdragon RF replacement board is a straightforward replacement for both Long board and short board C64 systems. It requires no modification to the main board, other than the removal of the old RF modulator. Everything is perfectly reversible should the user wish to return to a 100% stock system.

The replacement board contains a modern high bandwidth THS amplifier which amplifies and filters the VIC-II luminance and chrominance signals to produce a much cleaner and sharper S-Video and composite video outputs.

The new signals are obtained from the main 8-PIN output DIN A/V socket at the rear of the machine in the same manner as before. Existing AV cables can be used with no changes required.

An early revision “breadbin” C64 was used for this guide. It contained a Rev 1 VIC-II chip.

Note that NMOS (C64) VIC-II chips can suffer from chroma bleed onto the luminance signal internal to the chip. This varies from chip revision and manufacture. A CMOS (C64c) VIC-II generally performs much better providing near or no chroma bleed.

Installation

Although the Installation is fairly straightforward, you must have some basic electronics skills and suitable equipment to remove the RF Module.

ESD safety precautions must be taken at all times. If there are any doubts after reading this guide please use our professional installation service. VideoGamePerfection.com offers an Installation service for most systems.

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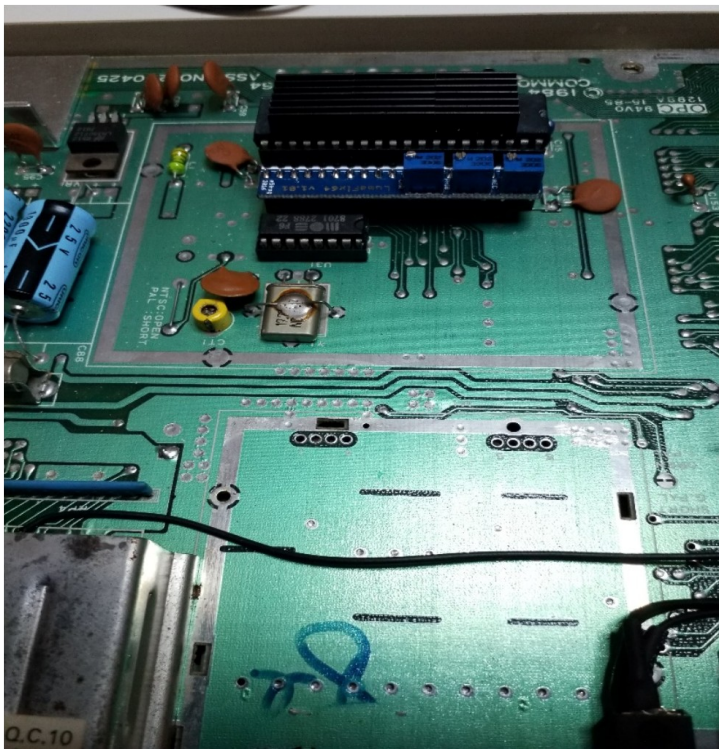
Step 1.

It is assumed you are familiar with connecting up and disassembling the Commodore C64 computer.

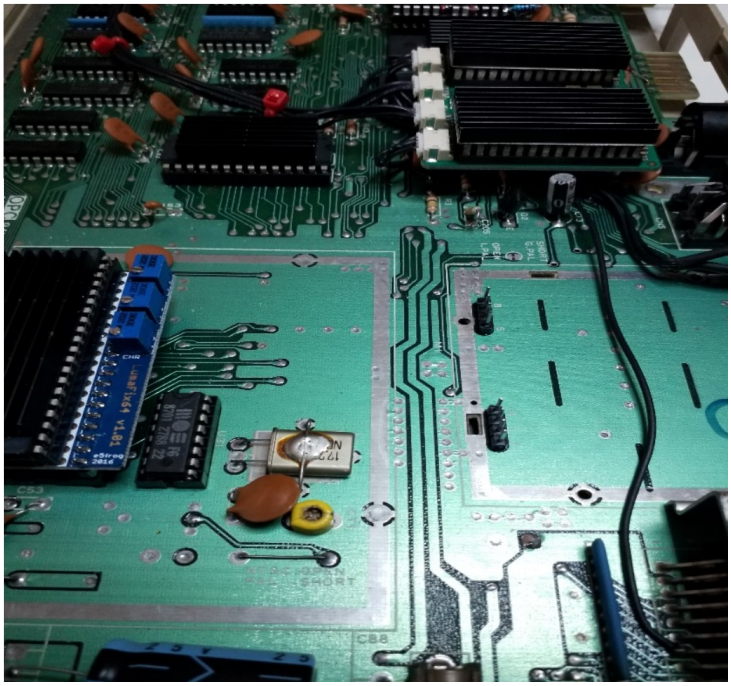
The RF modulatir must be carefully removed using suitable soldering equipment.

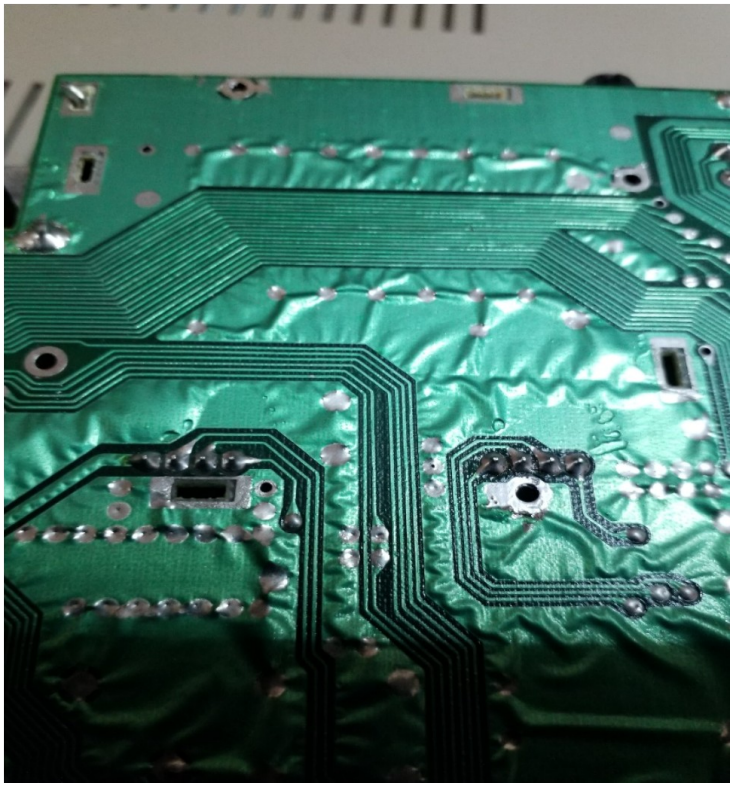


View from rear – 8 connection pads cleaned up.

Step 2.

Clean the pads and fit the 2 x 4 pin headers in place. Ensure that they are standing 90 degrees before soldering them in place.



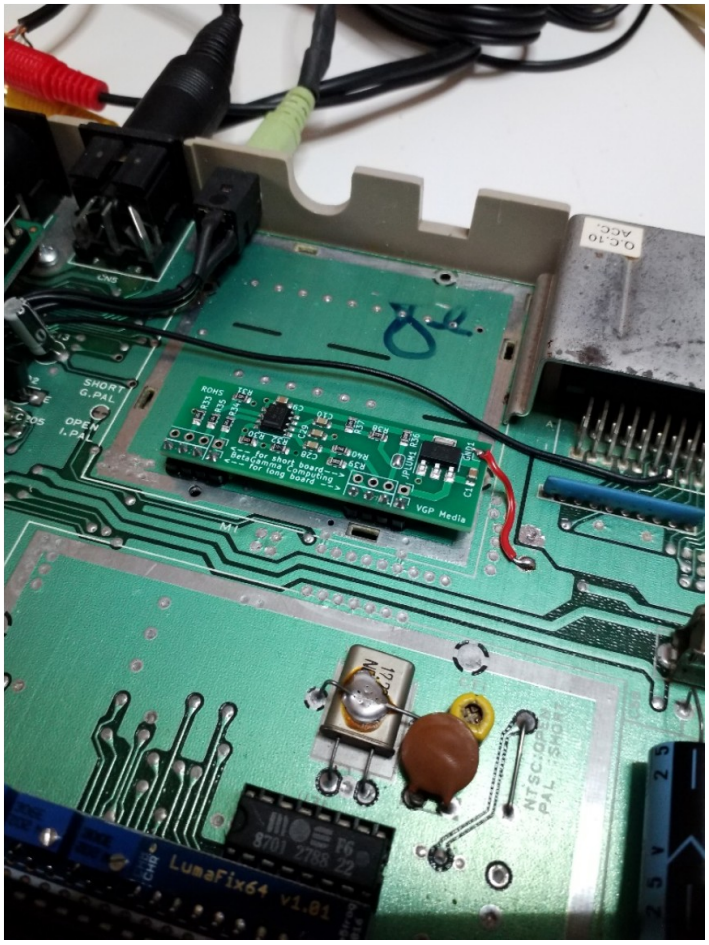


Step3

Re-fit the main board back in the lower case.

Now, solder the replacement board with a gap of at least 5mm from the main board as follows.

Ensure you use the right set of mounting pads for long board or shor tboard C64



If you are Installing into a long board using a NMOS VIC-II chip then you MUST close **JPLUM1** on the board too, using some solder to join the pads.

Finally, using a short length of insulated wire, hook up the GND pad on the top right of the replacement board to any convenient near GND point on the main board.

As shown in the above photo, I used a red insulated wire.

Under NO circumstances apply power to the C64 without this ground wire in place. If you do so you risk damage to your Commodore 64 computer.

Step 4.

Re-inspect your work, double check that the ground wire is correctly fitted. Connect up and test your Commodore 64 and enjoy the cleaner video output.

If you have a LumaFix 64 fitted it may need slight re-adjustment.

Bas Gialopsos - BetaGamma Computing May 2020