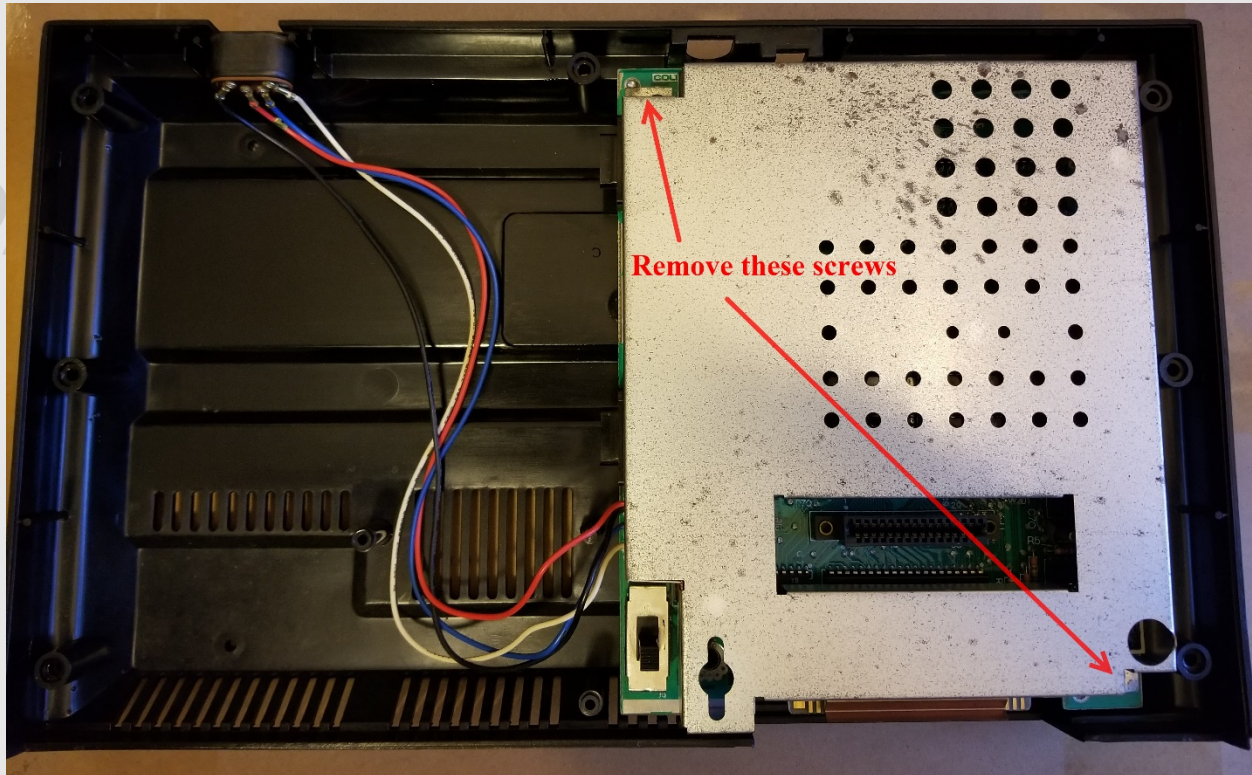

Colecovision RGB Board Install v1.1

Before We Begin:

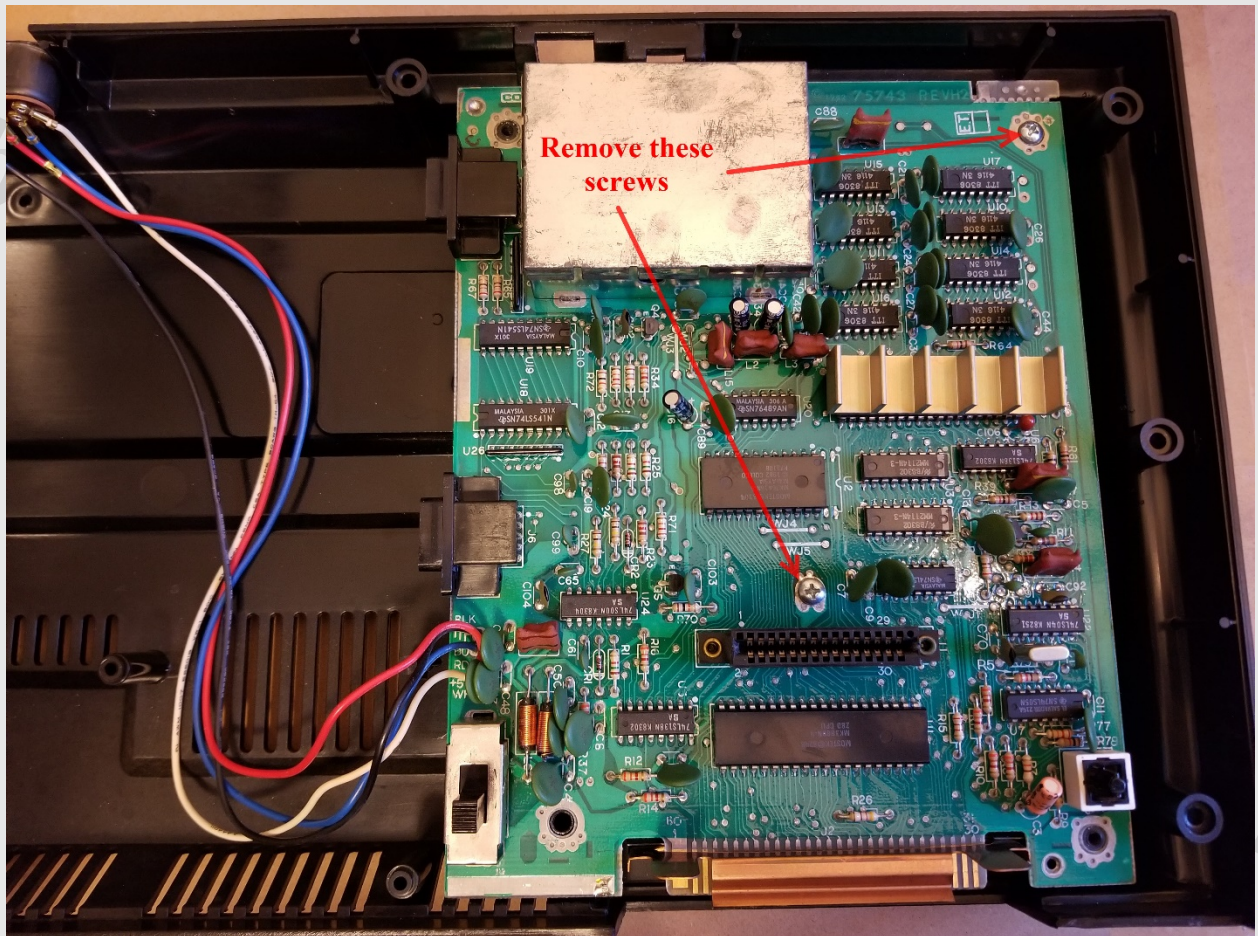
This document covers the DIY installation of the v1.1 citrus3000psi ColecoRGB board. Neither citrus3000psi nor Mobius Strip Technologies can be held responsible for any damage that occurs from the improper installation of this device. It is expected that the person performing this installation has the necessary tools and knowledge to safely do so. If you are not comfortable with soldering, electrical circuits, discharging capacitors, using basic hand tools, or working with old electronic devices that are prone to failure, please stop now and consult a qualified technician. You have been warned.

1. It is assumed that you have already removed the top cover of your Colecovision at this point. If not, there are many tutorials online to explain removing the top cover. It is also assumed that you have discharged the internal capacitors and disconnected the system from its power supply.

2. With the top cover removed the inside of your Colecovision should resemble this picture. There may be grounding straps soldered to the RF shield that will need to be removed as well. These can be removed by applying fresh solder with your soldering iron and lifting them off with tweezers while the solder is still molten.



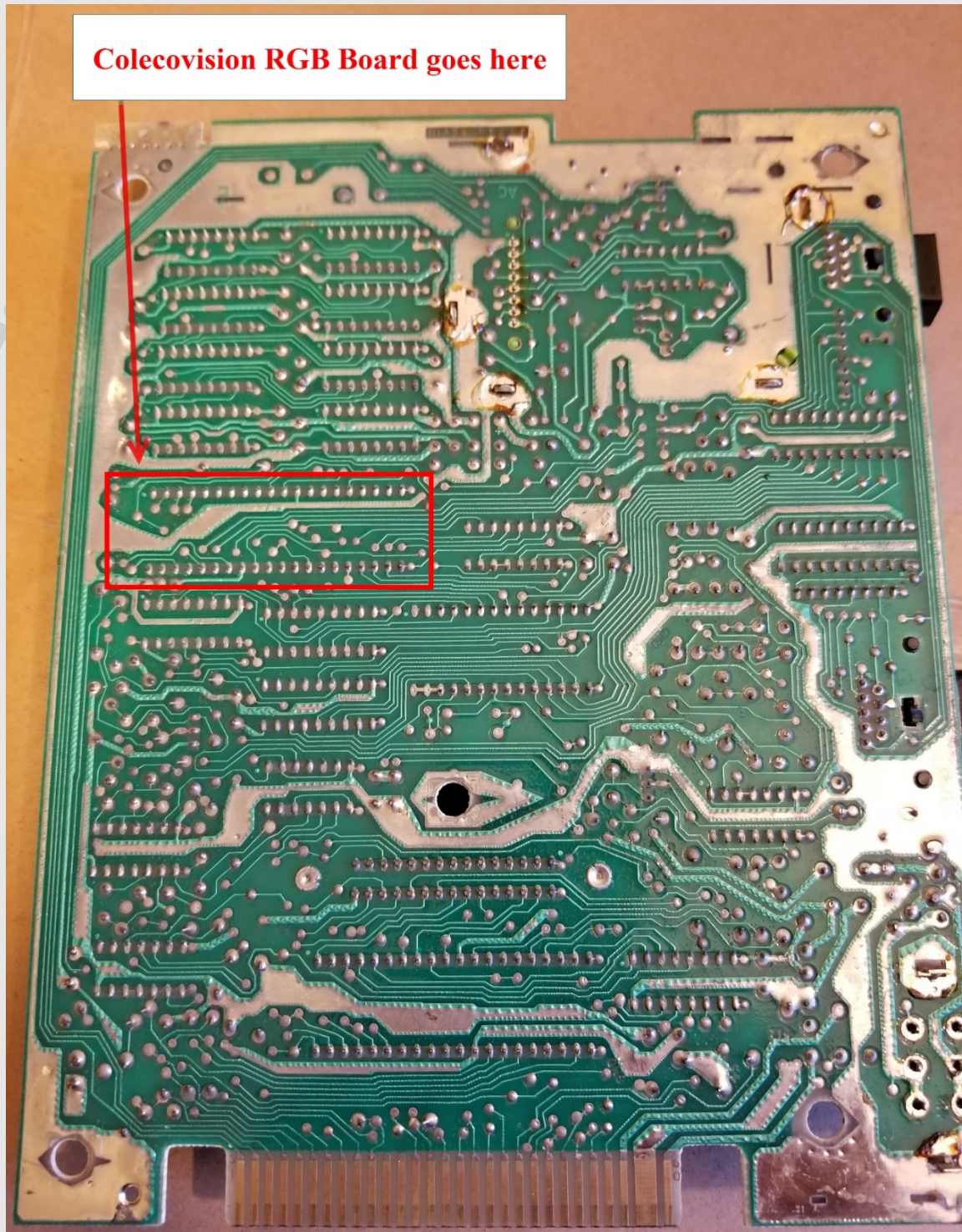
3. With the screws (and grounding straps if applicable) removed, remove the RF shield. Underneath you will see the mainboard again with 2 more screws to be removed and potentially with grounding straps again. (If the RF shield had grounding straps, there is usually one attached to the RF modulator box in the upper-left corner.) Go ahead and remove the 2 screws and grounding straps from the mainboard as shown in the picture below.



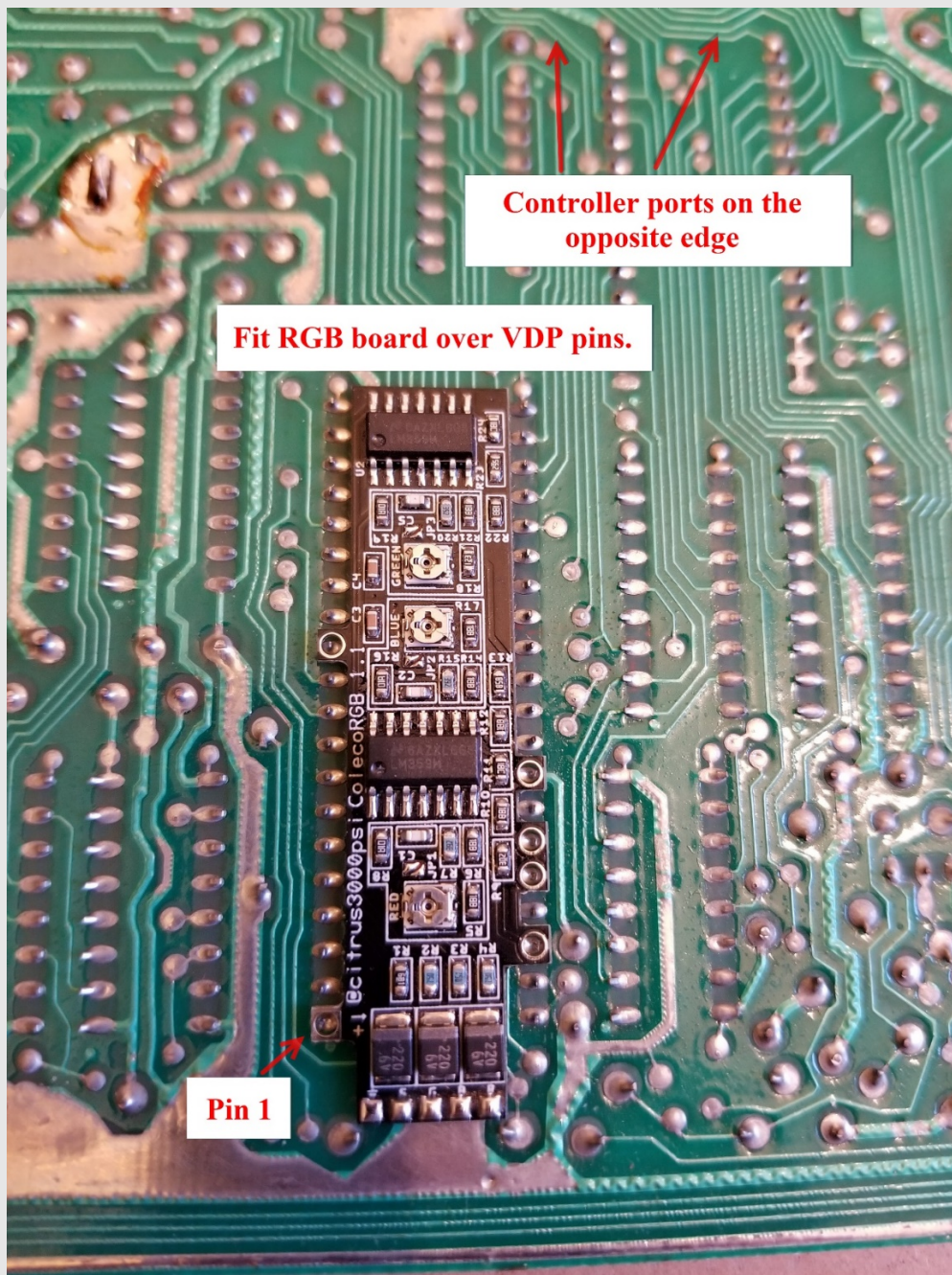
4. At this point we are going to remove the mainboard from the casing. Before we do so take note of the location of the VDP (Video Display Processor). This can be found at location U9 on the mainboard. It is normally covered by a heatsink as in the below picture. If you do not see a heatsink on any of your chips or have trouble locating U9, the VDP is a Texas Instruments TMS9928A and will be stamped as such on the chip.



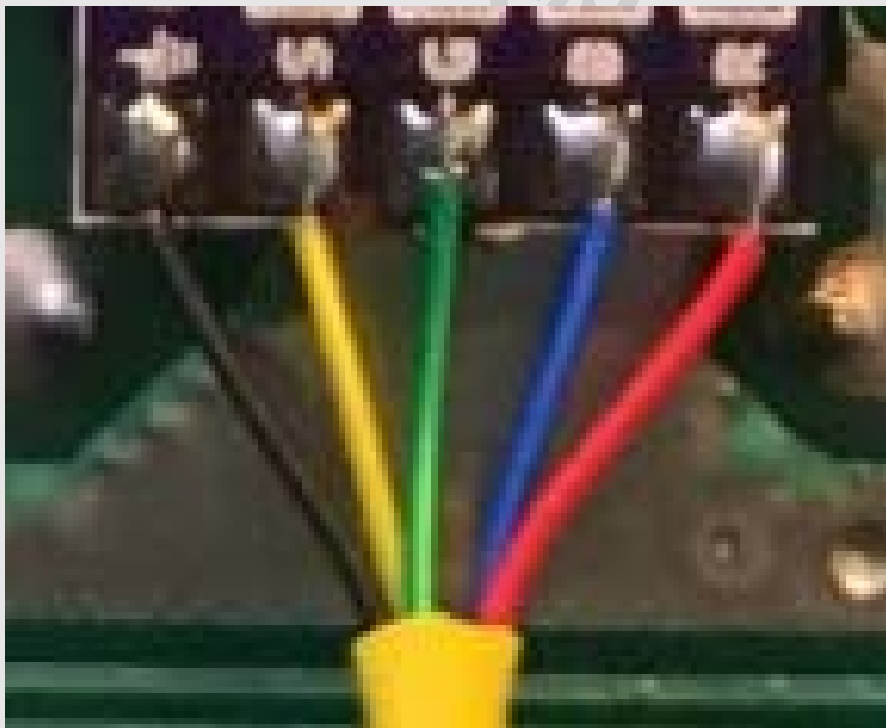
5. With the mainboard removed from the casing and flipped over on your workspace, locate the bottom of the VDP. Refer to this image for assistance.



6. Now you are ready to install the Colecovision RGB board. Before installation, it is a good idea to isolate the back of the board with electrical tape or Kapton tape. This is not “required” but is a good practice as the board will be sitting directly on the mainboard and making contact with bare traces and vias. Position the RGB board as shown in the picture below. Take note that the board has been rotated in this photo.



7. With the board properly positioned, solder each of the 6 through hole connections to their respective pins.
8. Now that you have soldered the RGB board to the mainboard, it's time to wire up your video connections. The recommended output connector is an 8pin mini-DIN or 8pin full-size DIN, but it is entirely up to your personal preference what you use. Depending on your output connector of choice, the location will be up to you. Keep in mind the spacing that is needed to reinstall the casing top and RF shielding, if you choose to do so.
9. The video output from the RGB board is Ground, 75ohm Composite Sync(Not Video), Green, Blue, and Red. In case it is hard to read, Ground is the pad closest to Pin 1 upon installation.



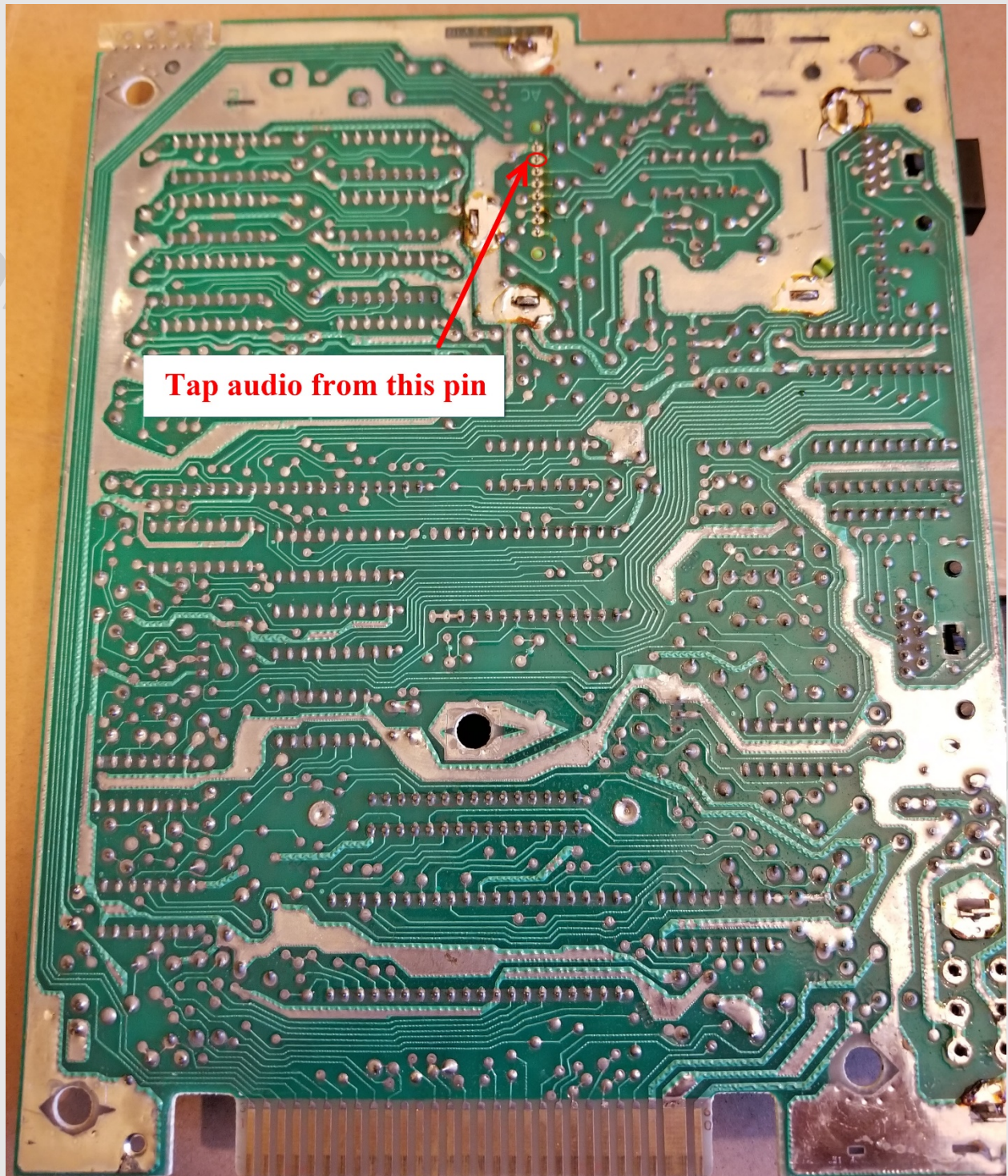
10. Now comes the important part, tuning. Before reinstalling everything you will want to tune the board. To do this properly you will want to use an oscilloscope. There are potentiometers for each color on the board. To tune each color, connect the ground lead of your probe to ground and the probe lead to the color you are tuning. The goal is to obtain .7VPP (700mV Peak to Peak) for each color and .3VPP (300mV Peak to Peak) for Sync. If your oscilloscope has a setting for testing NTSC video, use this to assist you with tuning.

11. Once the board has been properly tuned, it's time to reassemble.

Reassembly is the reverse of disassembly. Take care not to damage your wiring for the video output. You may need to bend or cut the RF shielding to accommodate your wiring.

If you require audio wiring as well, see the optional steps on the next page.

Optional Step 1: If you do not already have an existing modification to provide audio, you may want to take the time to do that now. Audio can be taken from pin 2 underneath the RF modulator as shown.



Optional Step 2: It is recommended that the audio output have a capacitor wired in line to filter out any unwanted noise. This can easily be done by connecting a 10uf 16v leaded electrolytic capacitor in line.

