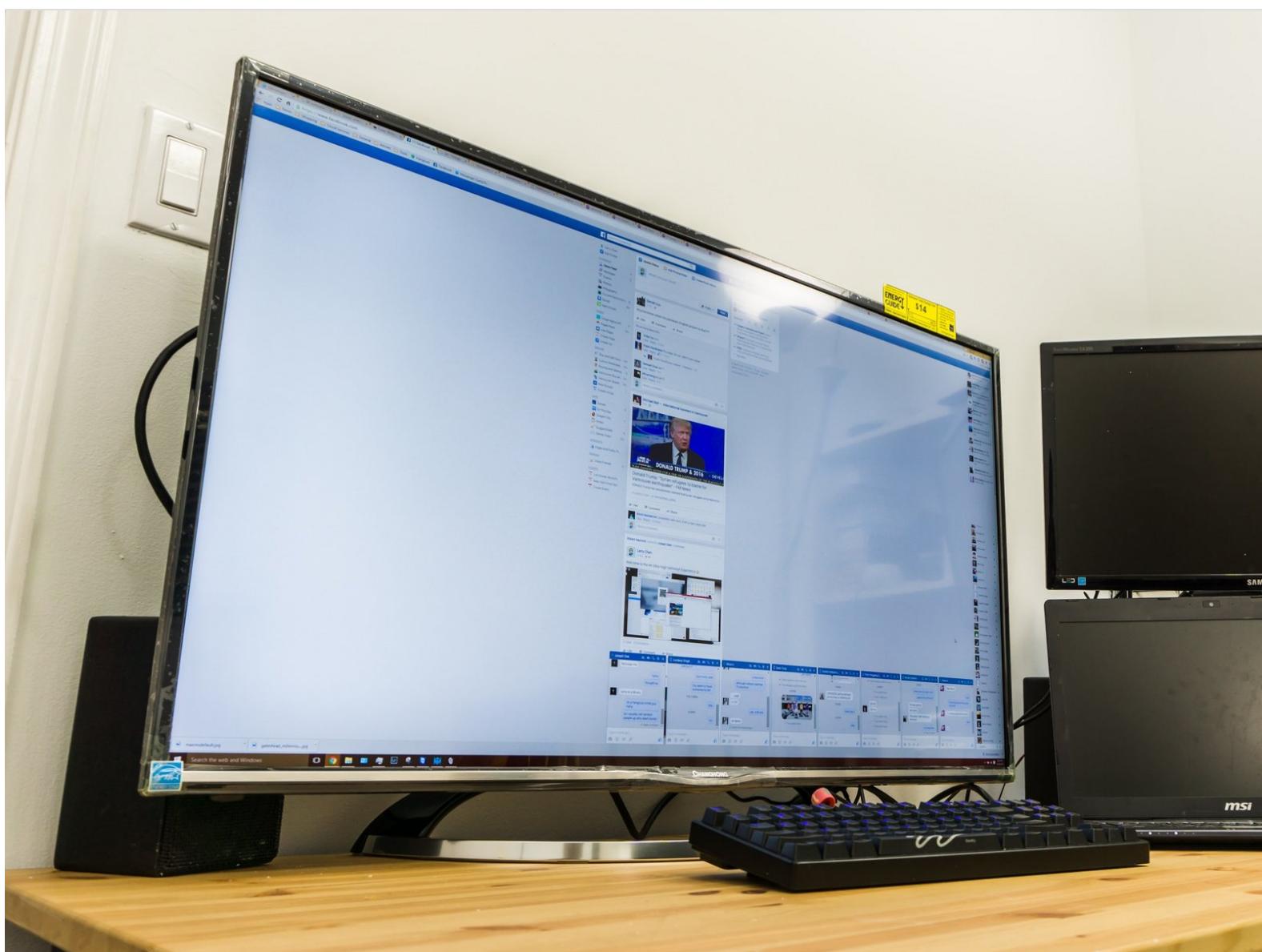




Changhong UD42YC5500UA 4K 42" LED LCD TV Teardown

Hey Last year my parents got me a new TV to use as a computer monitor, and being the curious tinkerer I am, I decided to take it apart and see what was inside! I'll attach some of my comments on the pictures!

Written By: Larry Chen



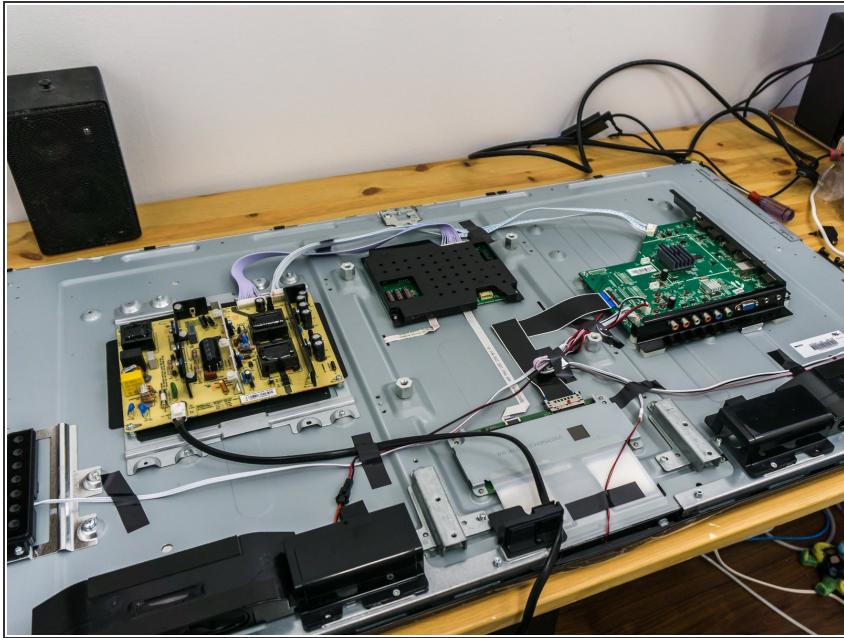
INTRODUCTION

Disassemble and have a look at the interior of a 4K television set.

TOOLS:

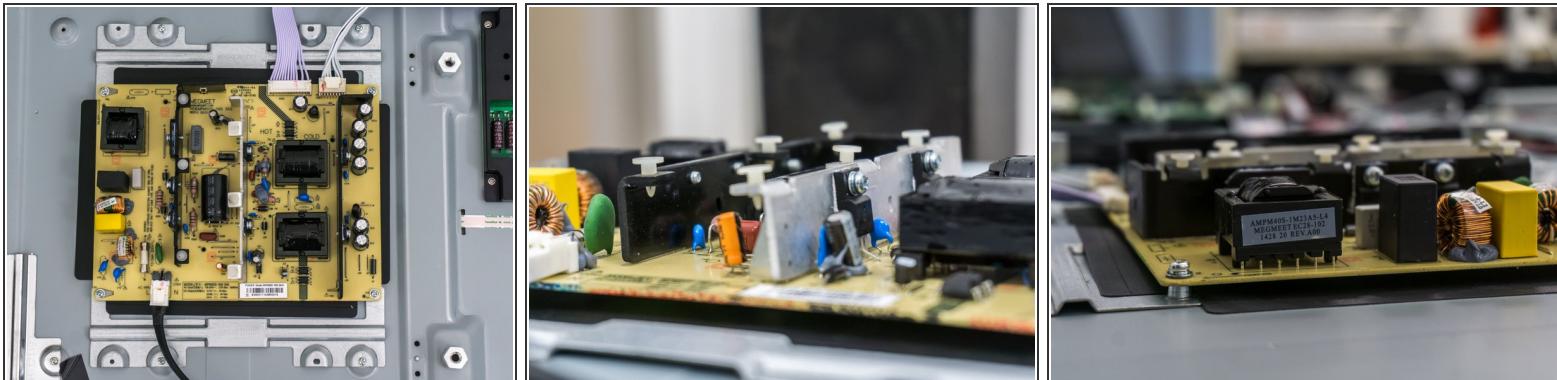
- Essential Electronics Toolkit (1)

Step 1 — Inside the TV - Back View



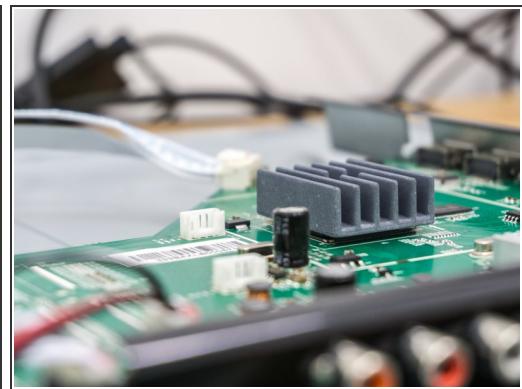
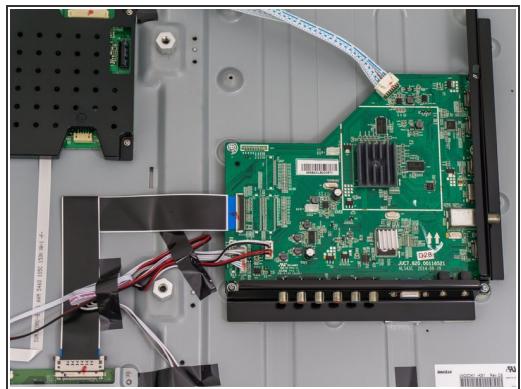
- Removing some screws (Phillips) off the back panel allows it to be removed.

Step 2 — Inside Boards 1



- This is the power supply. The output voltages include 24V (Backlight), 12V (Control + Panel).

Step 3 — Inside Boards 2



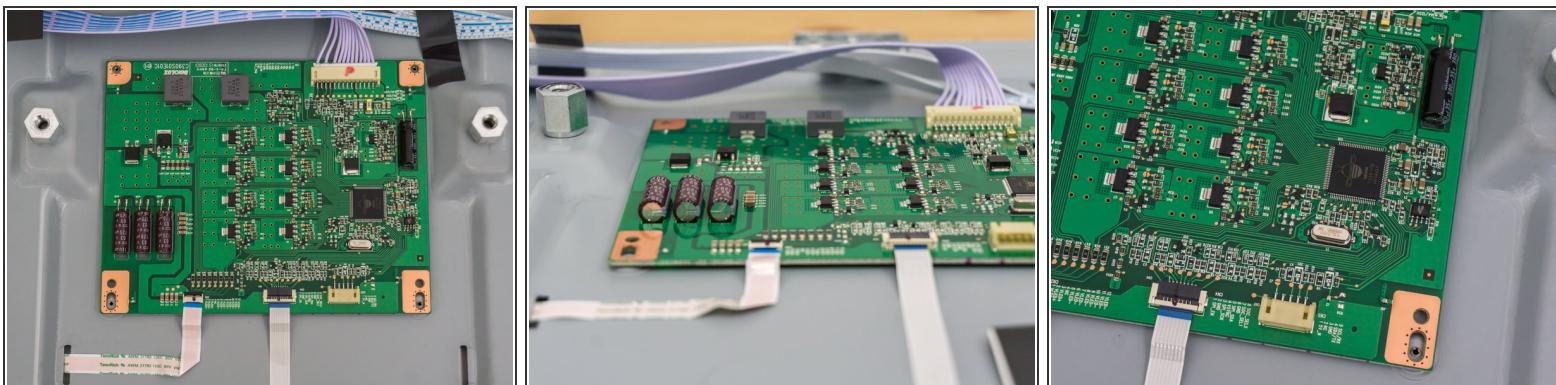
- This is the main digital board of the TV. It controls all of the TV's functions.
- An interesting note: The service menu (Press Input then 3138 on the remote) has a factory reset option inside it, DO NOT ever use that. It will cause the display to malfunction, and you will have to trigger it again blindly to restore video output.
- The main IC is a MStar chip. The heatsink is poorly adhered to the IC with double sided thermal tape, which may lead to early thermal failure of the IC (seems to be common issue on Newegg forums, digital board failed).
- I glued the heatsink using some thermal RTV adhesive I got from eBay.
- The board has some I2C or Serial UART port on it, maybe it can be used? The USB can supply 5V.
- One cable supplies display data to the panel.

Step 4 — Internal Boards 3



- This is the display TCON (Timing Controller) board. It is considered to be part of the Innolux panel.
- This IC becomes very, very hot during operation and the provided cooling seems to be insufficient. In order to make it possibly last longer, I added some fans to this area and powered them off of the 12V from the mainboard.

Step 5 — Internal Boards 4



- This is the LED backlight's controller. The backlight seems to run on a fairly high voltage and the backlight cable is thus quite thin (right angle cable in the first image.) It is covered by plastic cover.
- The controller appears to be built using a bunch of MOSFETs and inductors as a boost/buck/current limiting DC-DC converter. The board is well-cooled with a lot of heavy copper fill areas, in my experience it does not need extra cooling to be okay
- Straight ribbon cable goes to TCON to allow backlight contrast dynamic dimming and control on/off/brightness.

Step 6 — LCD Panel



- Model number of Innolux 3840*2160 panel. It can support 60p/60Hz if you replace the driver board with one from Alibaba I think, according to its datasheet.

Step 7 — Speakers and Audio



- The speakers in the TV aren't really good so I won't elaborate too much. I have a calibrated EQ profile for

them but I lost it, maybe ill make another if there is demand.

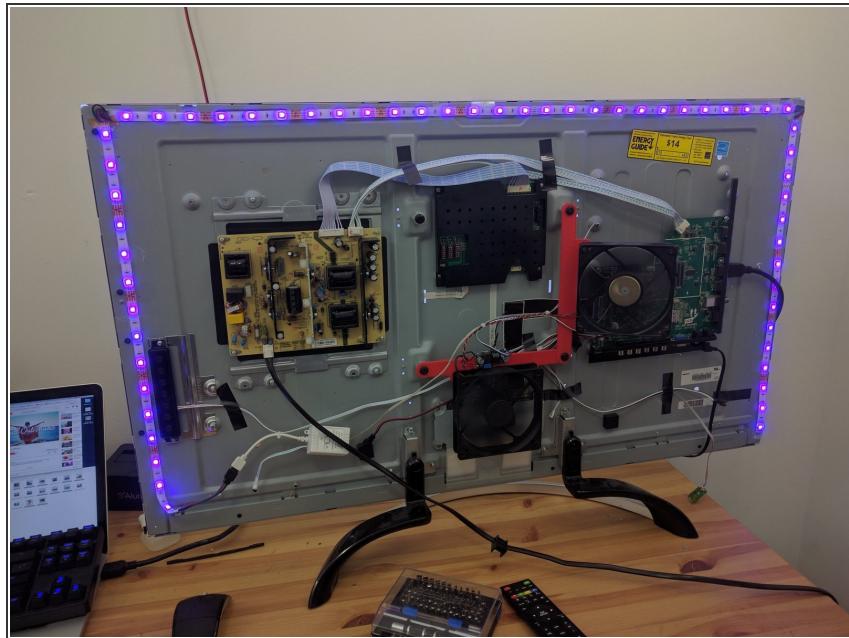
- Port is tuned for ~300Hz
- PEQ (Parametric EQ) is built into the Service Menu of firmware.

Step 8 — Debezelng modification



- The display can be debezeled by removing all screws from back, and then sliding the brackets to the side gently to release. Top side needs some prying to release. Border is 9mm after mod.

Step 9 — Cooling fan and LED mods 1



- I added two 120mm computer fans and some LEDs to the back of the display
- Fans held by 3d printed brackets.
- Fans powered by unpopulated 'Panel VCC' pins on mainboard so they come on when TV is on. LM2596 \$1 buck converter used to reduce voltage for silent operation. This fan orientation allows airflow to main PCB, as well as TCON. There will be some flow wash over to the PSU and Backlight Control.
- LEDs powered similarly.
- If the board GND hard to solder to, you can just use extra screw to mount that wire to Chassis GND.

Step 10 — LED mods 2



- Where i got my 12Vcc and soldering the controller...
- The controller IR remote and TV remote interfere with each other.

Step 11 — LED+Debezel mod Final Result



- Final result. Uneven lighting due to display is at an angle with the wall.