Michael Pastor – tracing internals, technical solution, proof of concept.

Viktoras Šidlauskas – ideas, part search, tests, support.

> Mod is not that easy – you should know what are you doing. We are not responsible for the concequences. What are we shure that our radios run well afther these mods. Mine for a months or so.

NIRVANA EXT BAY MOD

It fixes the issue of not powering fully ext module down. I will not replicate the description for this part as it is describet in at Michaels tutorial file **„NirvanaBayPowerMOd.pdf“**

There is also Stefan_73 version. But At this moment I can‘t tell if it is compatible with the Nirvana Power mod described below..

NIRVANA POWER MOD

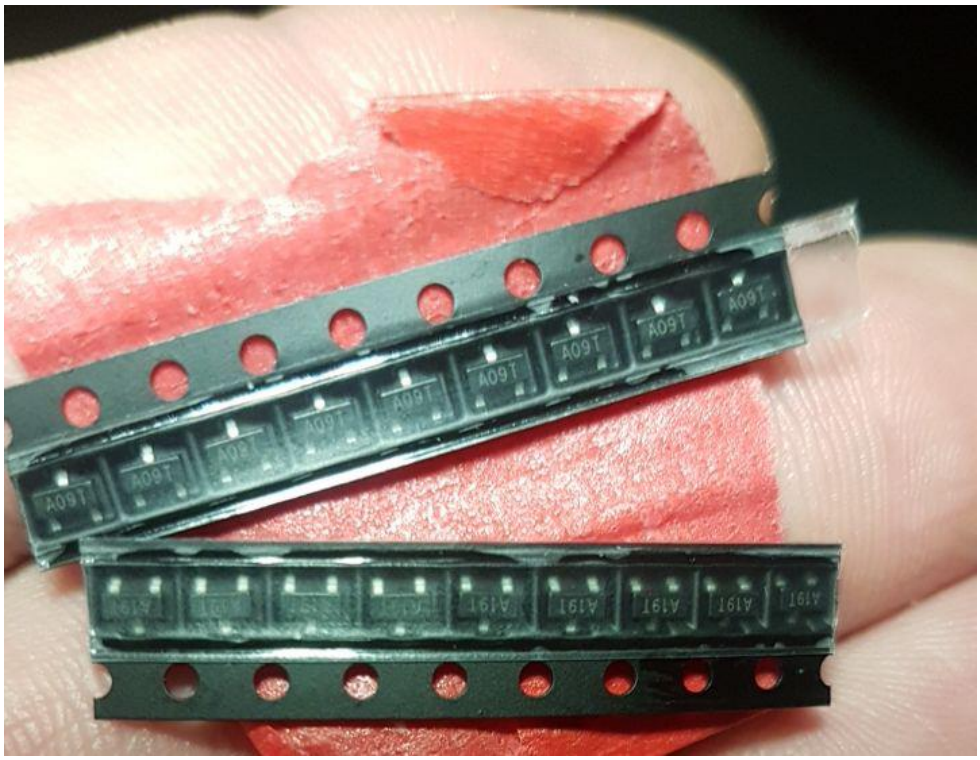
> Even with an ideal battery charged to 4V if you draw 1A (3.5W) from the power supply you will get bellow the 3.5V minimum required by the radio.
>
> The Ext module bay is powered from the same input as main circutry, so the module (Crossfire/Lora 1W) drops the input voltage lower than it is required to run internal circutry.
>
> This needs to be fixed.. by:

1 Parts neeed

2 Mosfets needed: AO3400

AO3400 AO3400A A09T SOT23-3 Original IC chip Chipset BGA In Stock

https://www.aliexpress.com/item/32901807788.html?spm=a2g0s.9042311.0.0.27424c4dUJFOn5



Booster: Newest Multi-function Mini Boost Module Step Up Board 5V/8V/9V/12V 1.5A LED Indicator Diy Electronic Voltage Module High Quality

https://s.click.aliexpress.com/e/novJpi4C

Multi-function mini boost module

Basic parameters
The output voltage can be set to 5V/8V/9V/12V, the default is 12V
Input voltage range: 2.5V~VOUT-0.5V
Output performance: Take 3.7V lithium battery input as an example, it can output 5V1.2A, 8V0.7A, 9V0.6A, 12V0.5A. Make sure that the input current and output current do not exceed 1.5A.

Voltage setting description
The front side of the PCB can be seen with the words A and B. The output voltage can be changed by using the soldering iron to change the pad on and off. In the following table, 0 means the pad is disconnected and 1 means the pad is connected.

A	B	VOUT
0	0	5V
0	1	8V
1	0	9V
1	1	12V

The pad next to the LED indicator can also be turned off to turn off the indicator.
Product size: 22 × 11 × 3.6mm

€ 0,25 9%OFF | Newest Multi-function Mini Boost Module Step Up Board 5V/8V/9V/12V 1.5A LED Indicator Diy Electronic Voltage Module High Quality
https://s.click.aliexpress.com/e/novJpi4C

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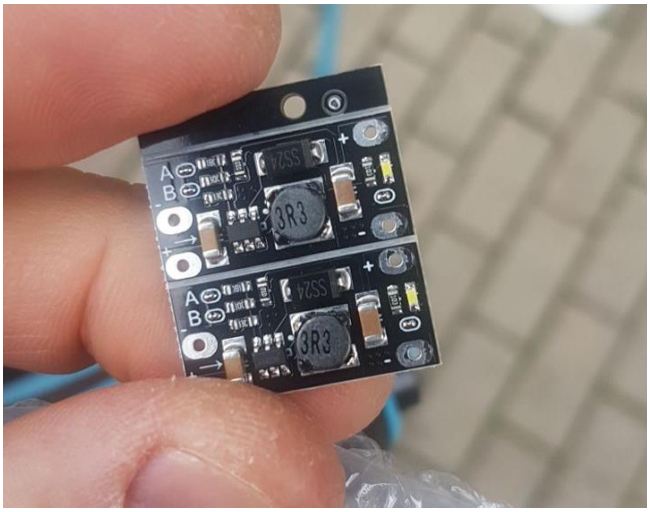
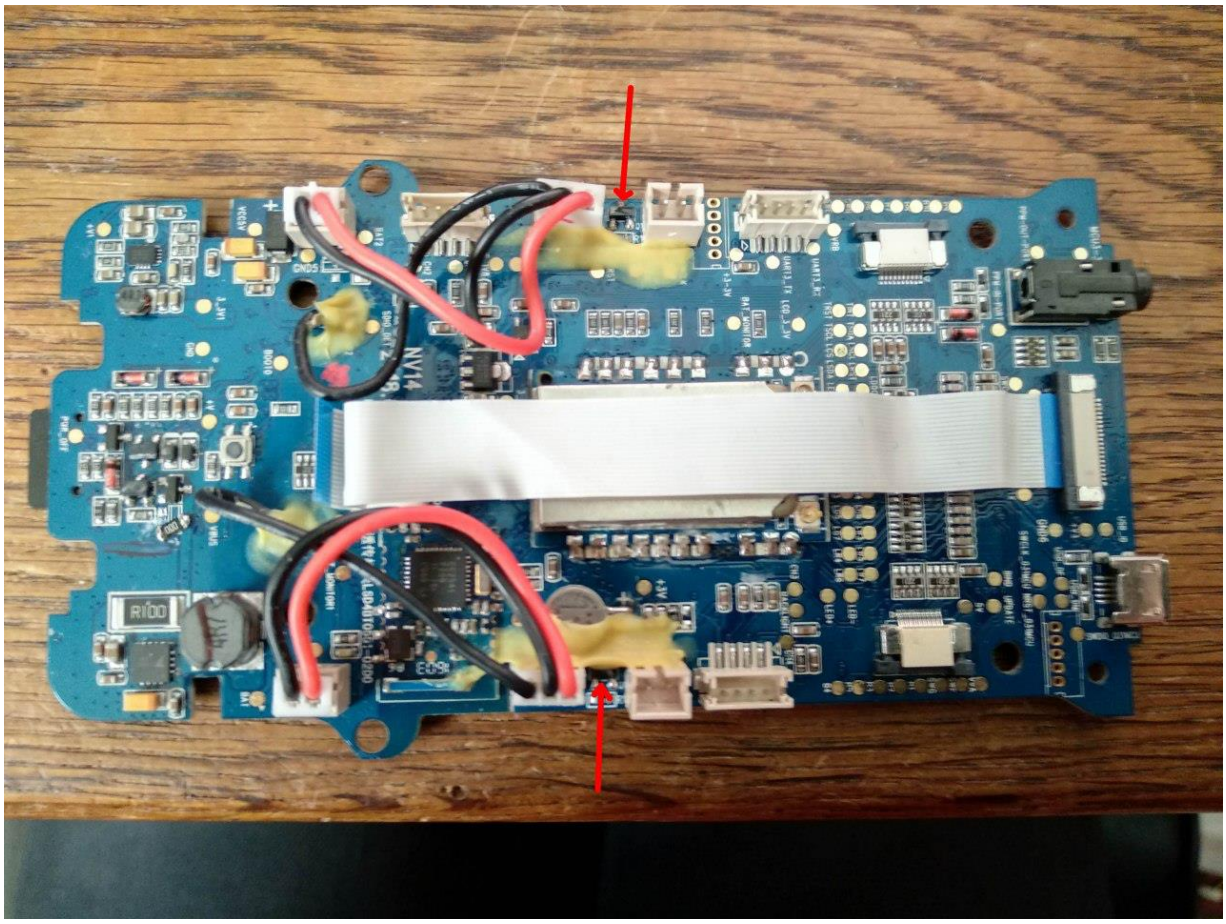
€ 0,25 9%OFF | Newest Multi-function Mini Boost Module Step Up Board 5V/8V/9V/12V 1.5A LED Indica...



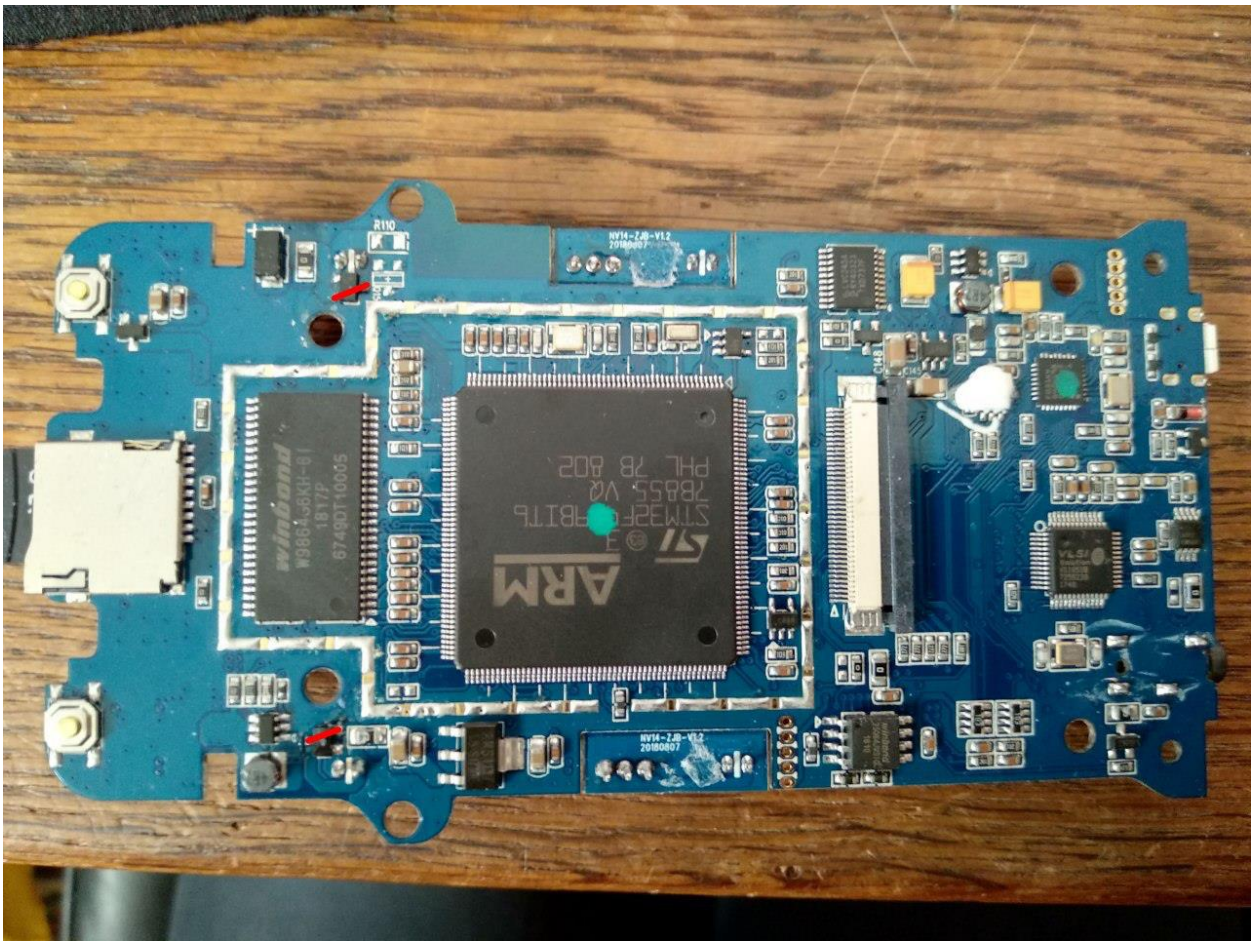
2 Replacing polarity check transistors

1. Replace the transistors on the little separate boards on the sides the battery connects to. Use an AO3400 like for the module bay power mod. You recover from 226mV drop to 35mV.



3 Shorting unnecessary transistors

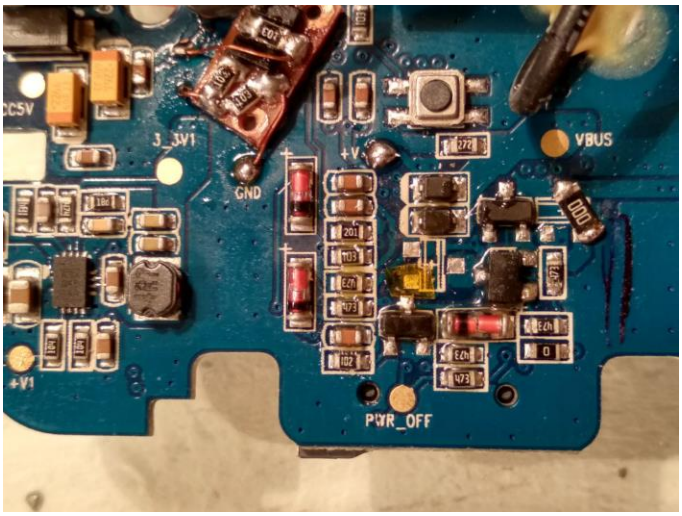
1. Shorten these two unnecessary first power switchg stage transistors. They do not affect anything. You will recover 35mV.



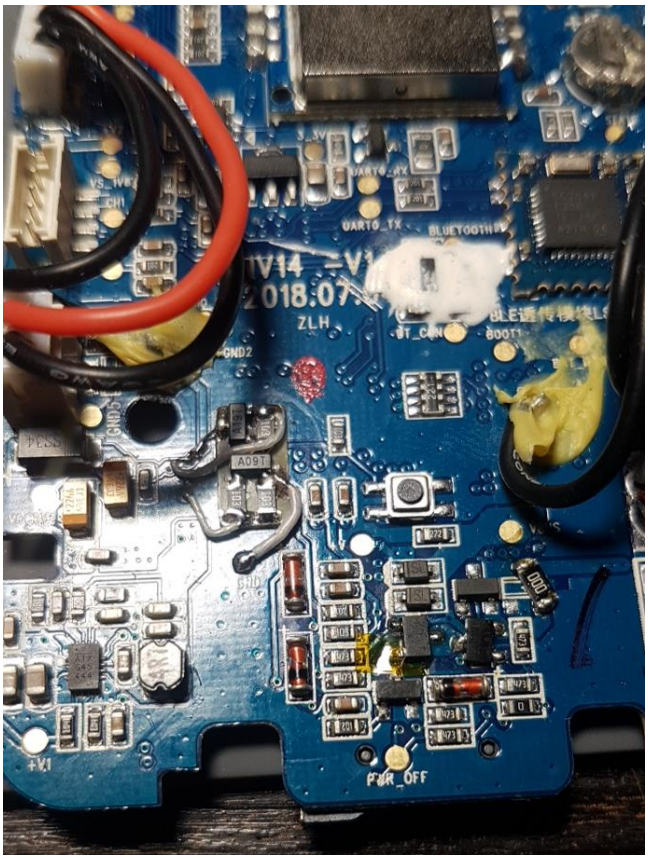
4 Installing internals DCDC booster

1. Set th booster to 5V, it has pads for this - check the booster description.
2. Put the DCDC booster on the adhesive tape near the upper corner of the radio module. This is the best place that module fits in. Also you could wrap it in polyamide tape, but shure you soldered wires first. You can warp and stick it to the board in the end when all wires are soldered:

3. Remove the transistor I removed in this picture and put a piece of polyimide tape on the pad like on the picture. Best to desolder with hot air (350C).



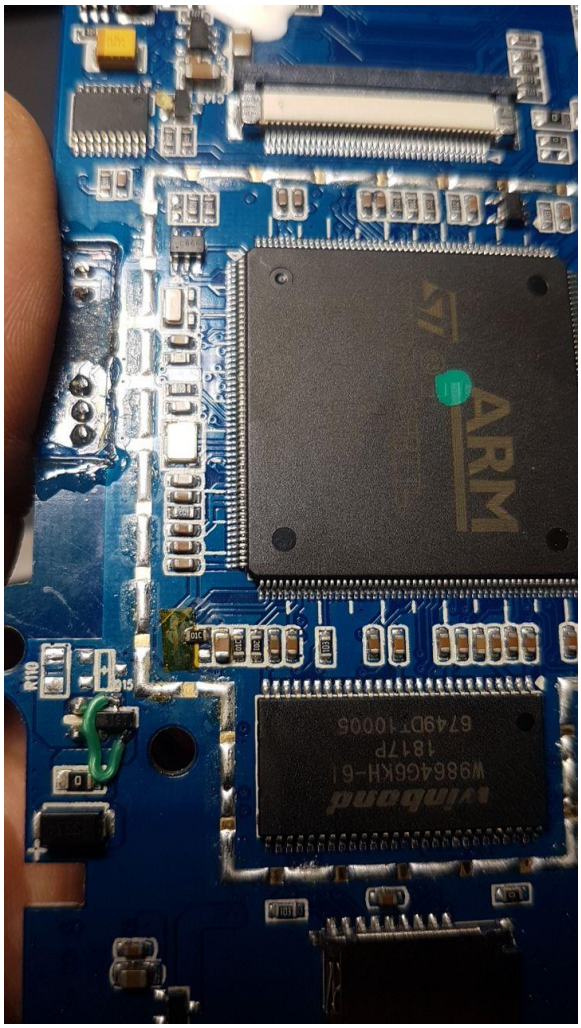
4. Then put the transistor back and make sure there is no continuity between the insulated pad and the V+ pad.

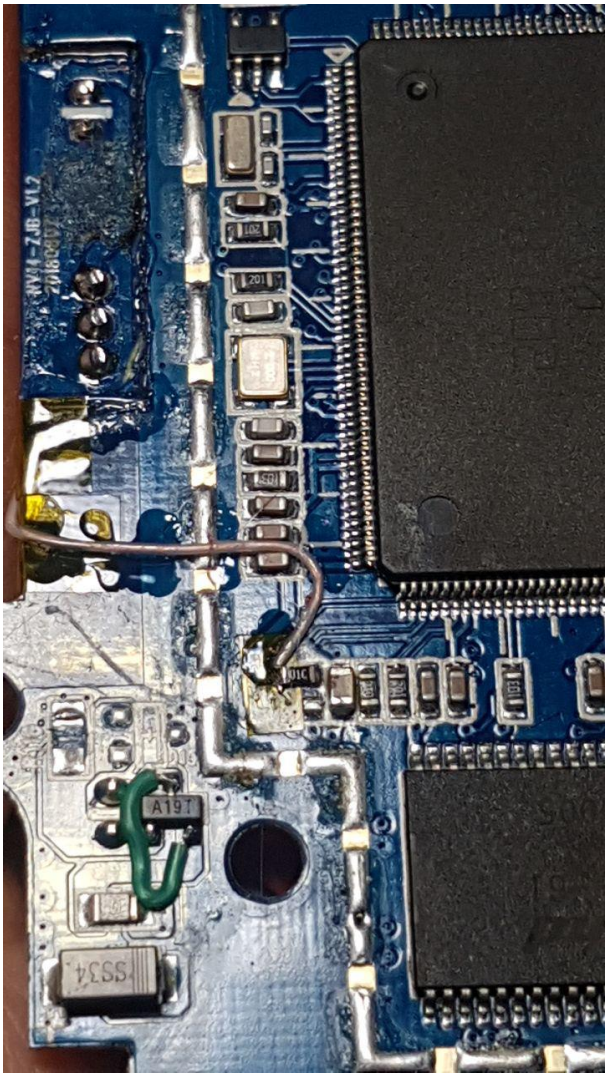


5. Next connect:
    a. the **V+ input of the booster to the insulated pin of the transistor**,
    b. the **output** of the boost to the **+V pad** on the radio (see +V in the picture in section 3),
    c. the **ground to one of the ground** pads on the radio

5 Rerouting battery sensing

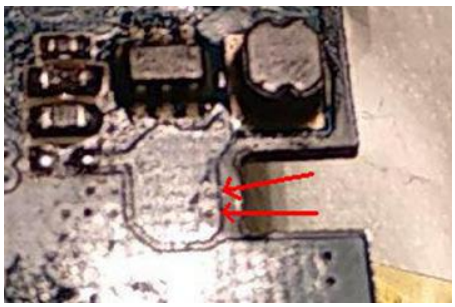
You will have to rotate the resistor in the center of the picture, insulate it's free end like in the picture and connect it to the input V+ of the booster, so that it will read the voltage (battery) value before the booster but not after that will be constant 5V now after the booster.

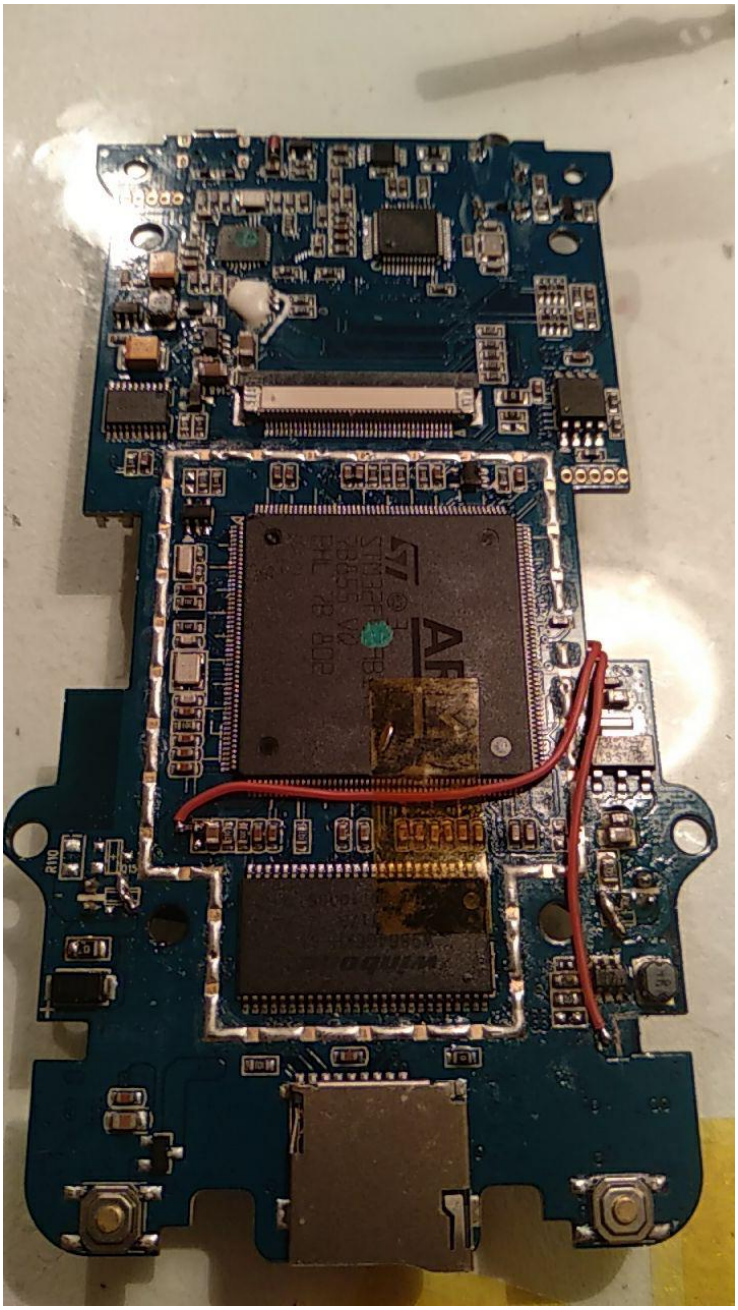




6 Rerouting Ext module input

1. Disconnect the DC-DC for the module bay from V+ by cutting pad like in the photo. See red arrows pointint at layer connecting holes on the second picture. Be carefull cut vertical line left to the holes as in the second picture . Don’t cut too deep.
2. Test if EX module booster (6 leg chip in first picture) input that is left part of the pad do not has connection with the +V on the internals.

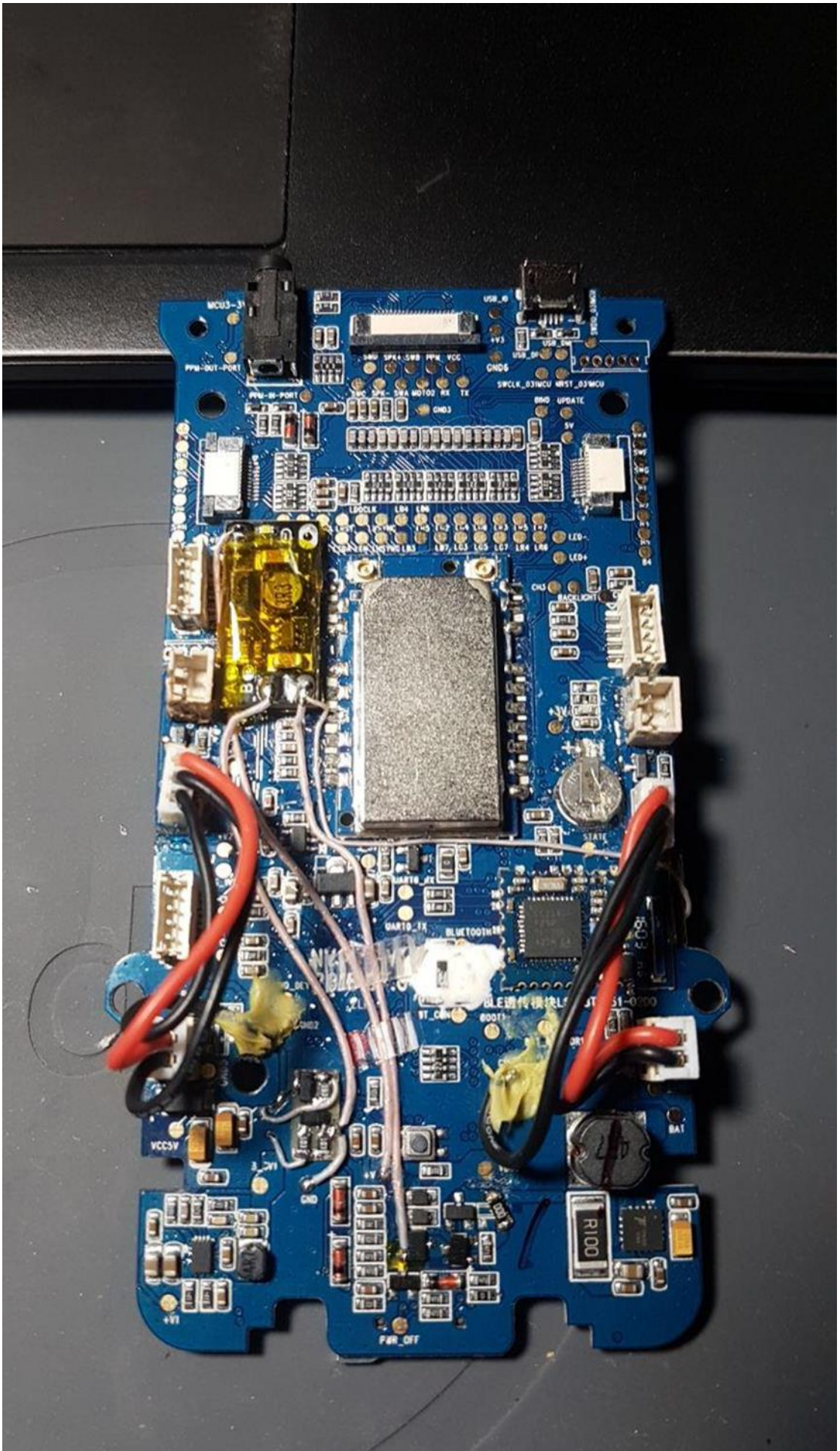




3. Connect then it to the positive input of the boost you just installed so that the input of the external boost is the battery voltage so the same input point as the new booster you have installed, but not the output of the new boost for the internals.
   Without this mod ext module will continue to kill the Nirvana when run on high power.

BTW:

1. Nirvana power switch transisor that you need to insulate is a P channel FET. Just in case you will fry it...
2. the lowest safe voltage is around 3.2V depending on the quality of your cells. The cells used are not that good they were salvaged from an old It works..


PPM-OUT-PORT
PPM-IN-PORT
SWCLK_03/MCU
NRST_03/MCU
UPDATE
BACKLIGHT
STATE
UART0_RX
UART0_TX
BLUETOOTH
VCC5V
GND
BAT
R100
PWR_OFF