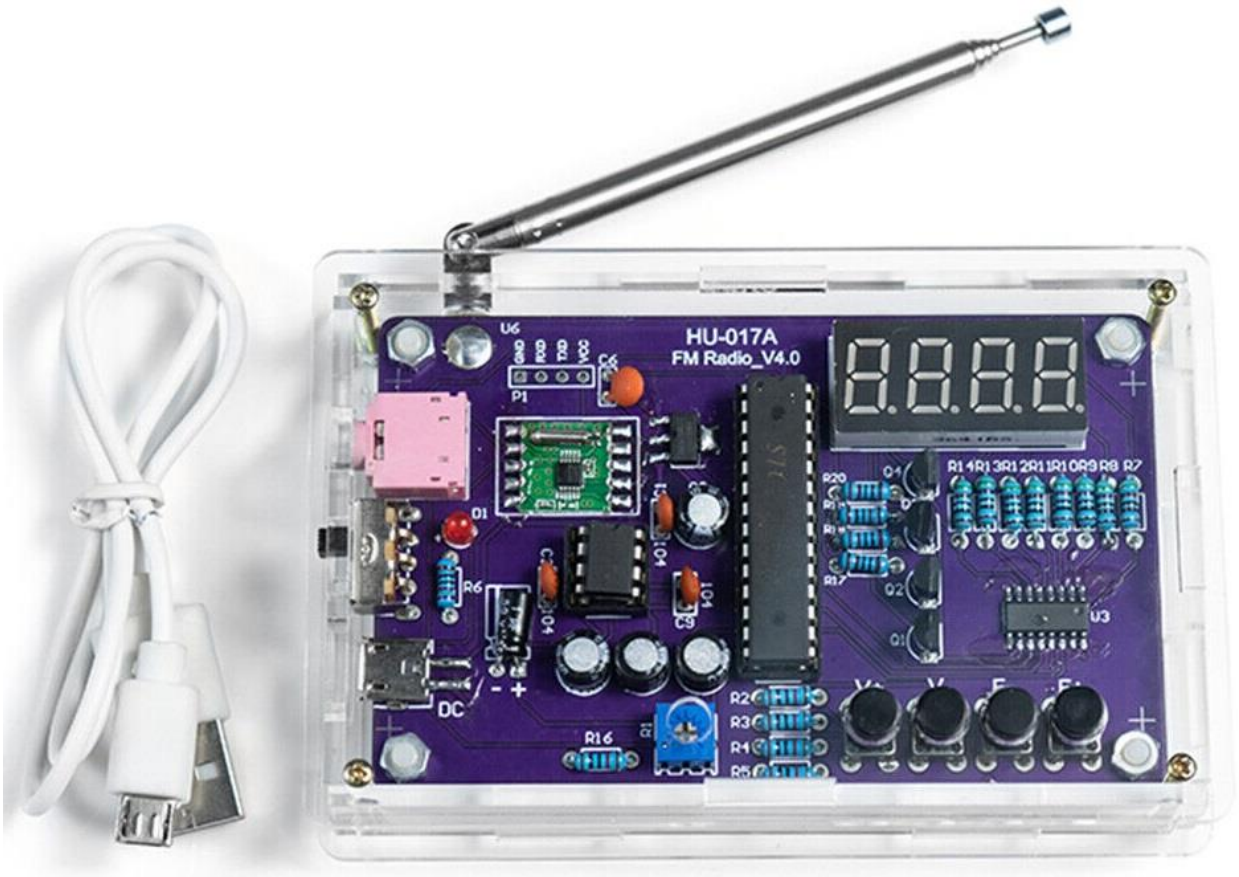



Whit this FM Radio, when it is finished, you can listen to several radio stations transmitted by air in the frequency range of 87-108MHz. So all you favorite stations on this small device!
It is a: do it yourself building kit, with all components inside the package!
The only thing You need to provide, is a soldering tool with solder, solder skills, a power source and or batteries. Some screwdrivers, cutters etc..

A standard RDA5807S does the receiving, The amplifier is a TDA2822 ic, a simple and good buildable electrical circuit and a good overall sound quality!

## Table of Contents:



## 1.1 Build guidance.

### 1.1.1 Item list:

**List of accessories**

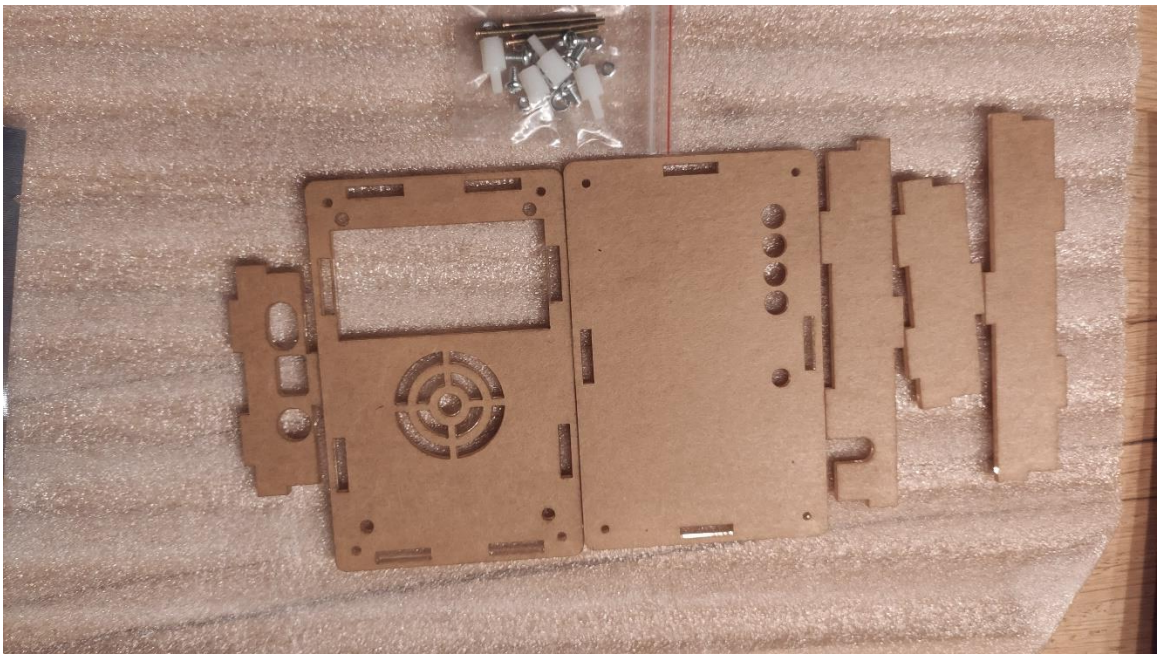
| Component name | Quantity | Installation position of component corresponding to PCB |
|---|---|---|
| 74HC595D chip | 1 | U3 |
| 4 bit digital tube red | 1 | U7 |
| In-line resistance 10K | 5 | R16,R2,R3,R5,R4 |
| In-line resistance 1K | 5 | R17,R18,R19,R6,R20 |
| In-line resistor 510R | 8 | R13,R14,R7,R8,R9,R10, R11,R12 |
| Horizontal toggle switch | 1 | P5 |
| 2P Android MCRO power interface | 1 | DC |
| radio rod antenna | 1 | U6 |
| Pink 3.5mm headphone jack | 1 | U4 |
| Vertical micro switch | 4 | S4,S1,S2,S3 |
| A56 black keycaps | 4 | S4,S1,S2,S3 |
| STC15W408AS MCU | 1 | U2 |
| TDA282M Dual Audio Amplifier | 1 | U9 |
| In-line electrolytic capacitor 16V100UF | 4 | C4,C5,C7, C8 |
| S8550 in-line triode | 4 | Q3,Q2,Q4,Q1 |
| Electrolytic capacitor in-line 50V1UF | 1 | C3 |
| 8R (large magnetic) horn | 1 | U8 |
| Radio module RDA5807M | 1 | U1 |
| Precision Potentiometer 200k(204) | 1 | R1 |
| 104 ceramic capacitor | 4 | C1,C2, C6, C9 |
| 3mm LED red light red | 1 | D1 |
| AMS1117-voltage regulator chip | 1 | U10 |
| 8P IC socket | 1 | U9 |
| 28P (narrow body) IC holder | 1 | U2 |
| 2P red and black parallel | 1 | / |
| Double-sided tape | 2 | / |
| M2*6mm round head screw + nut | 1 | / |
| 2 AA battery boxes | 1 | / |
| circuit board | 1 | / |
| android micro usb power cable | 1 | / |
| Shell + screw pack | 1 | / |

## 1.2 Unpacking the package.

Please unpack the plastic bags gently and sort them on a plate or table.

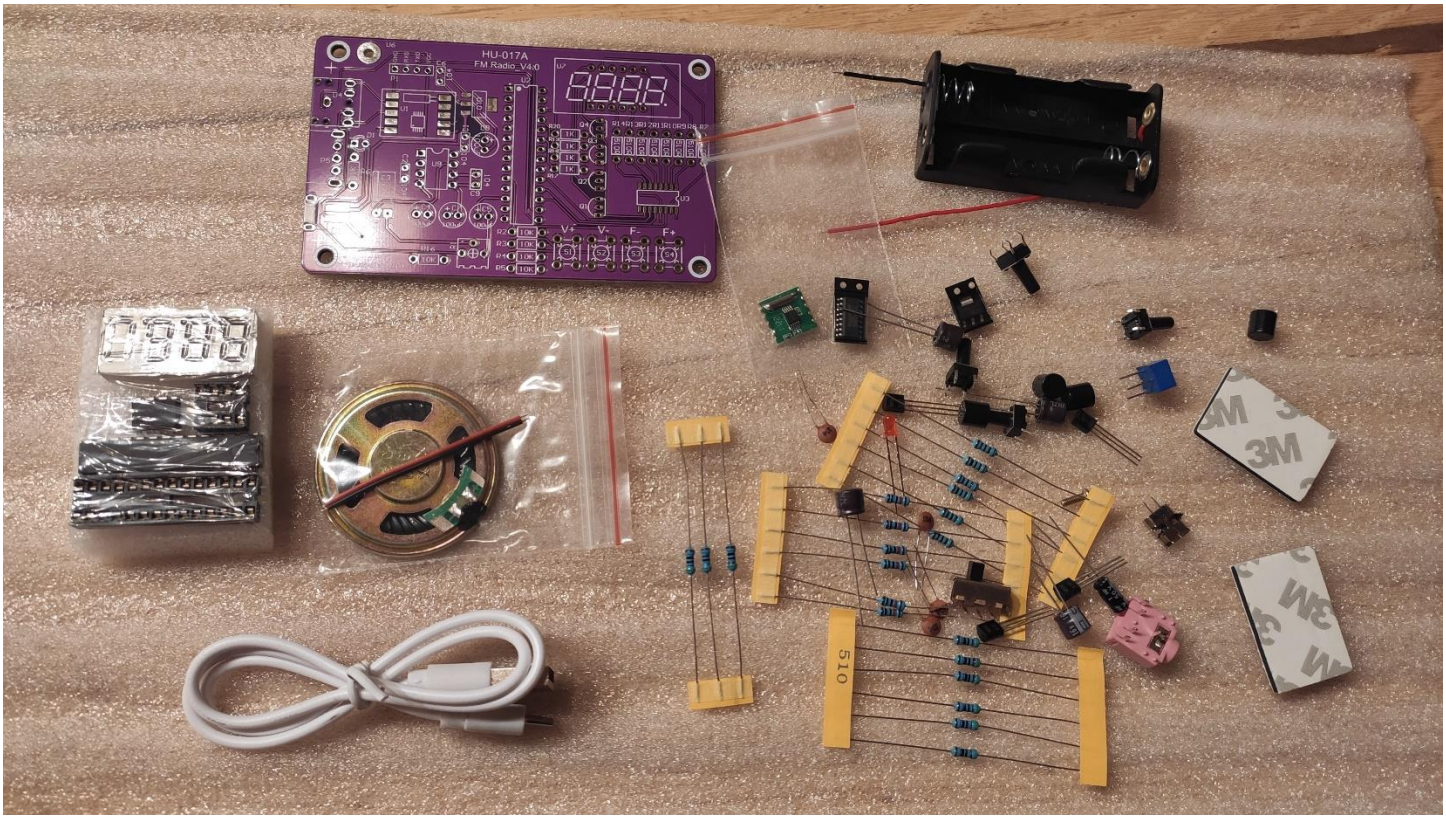




Leave the brown protection paper on the plexiglass plates, for protection.

Be sure that all components are present:




Check the item list carefully.

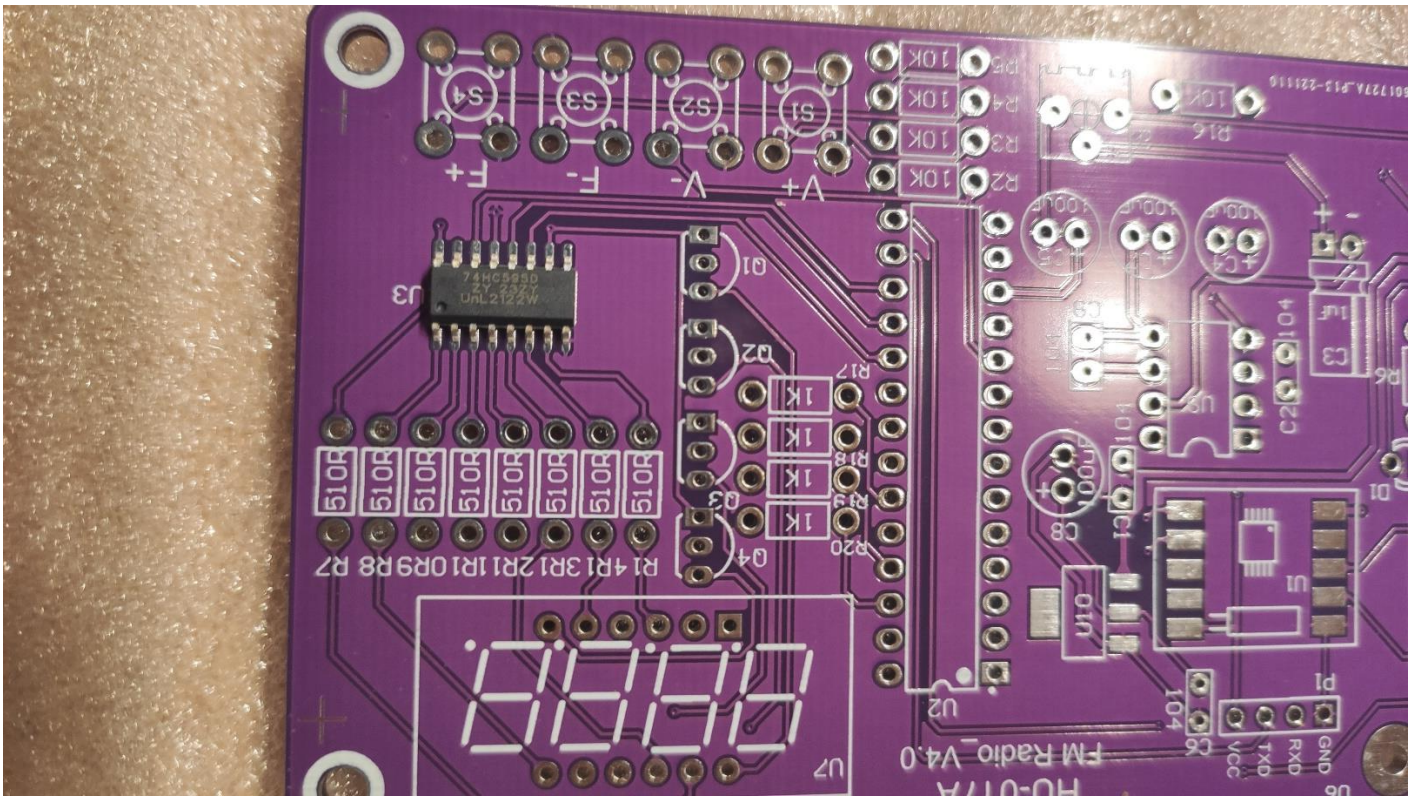
## 1.3 Step by Step:

Here are some pictures from the step by step process:

### 1.3.1 The Build:

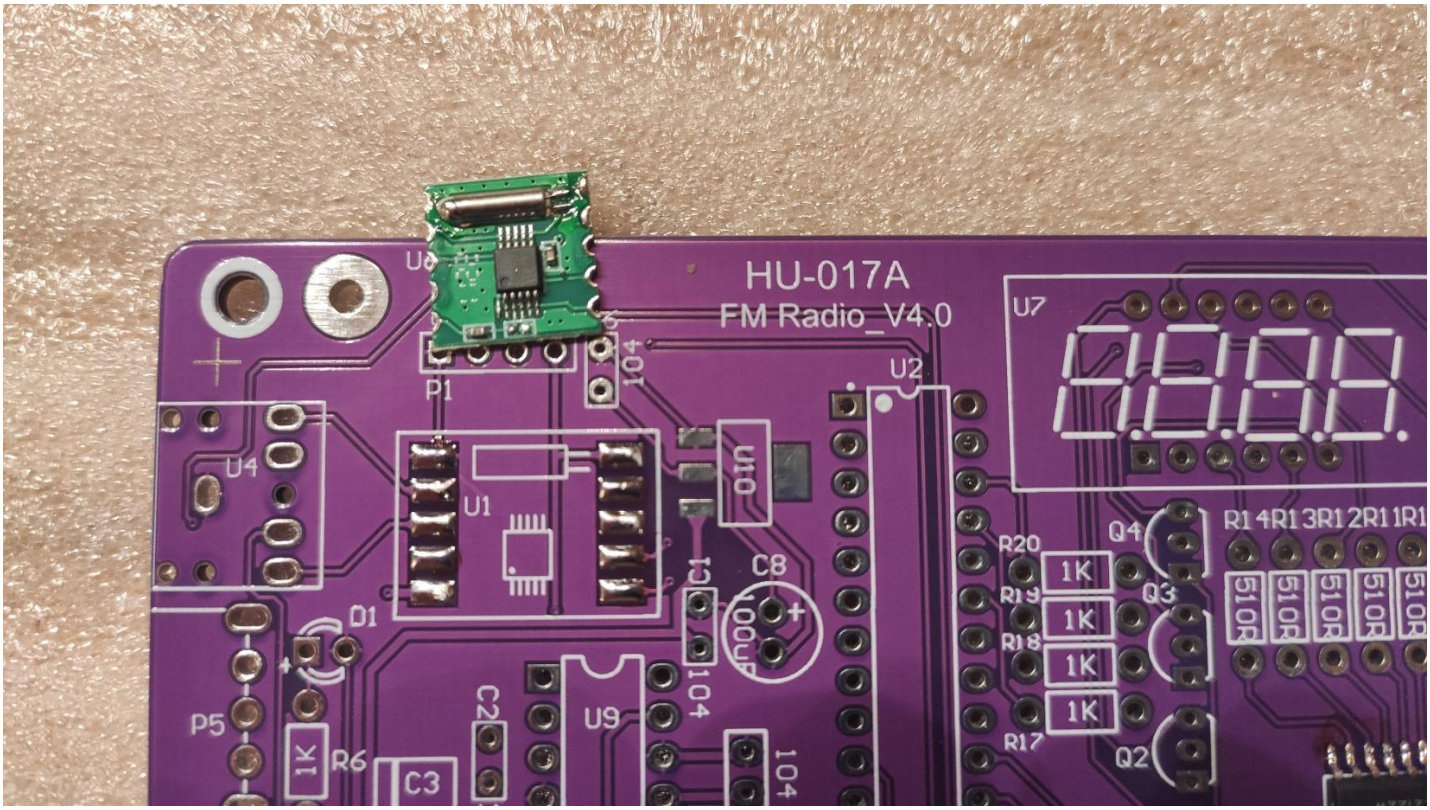
**Note:**
The FM Radio kit has several very small SMD components.
These components should be soldering first, because they are the smallest size of all.

Start with item U3




Be sure that the IC 74HC595D is positioned like the picture. Once you have soldered this one wrong it is a disaster to remove and resolder!!

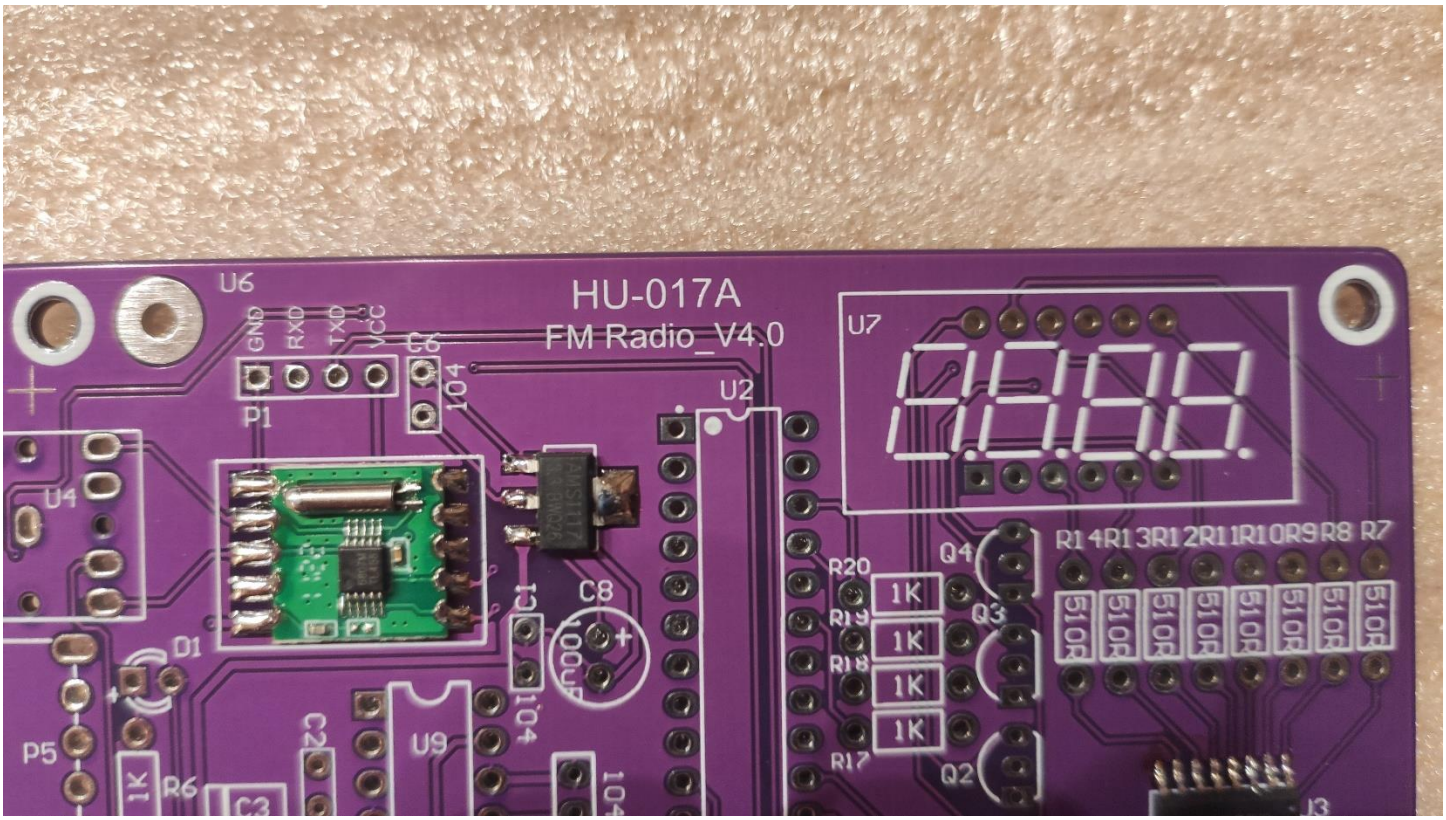
Next is Radio module U1:




Solder this Radio module on the pcb.
Pre-solder the solder pads first, like on the picture.
Do not solder on the radio module itself! Only the small notches are there to solder!

Next is the Voltage regulator chip U10:



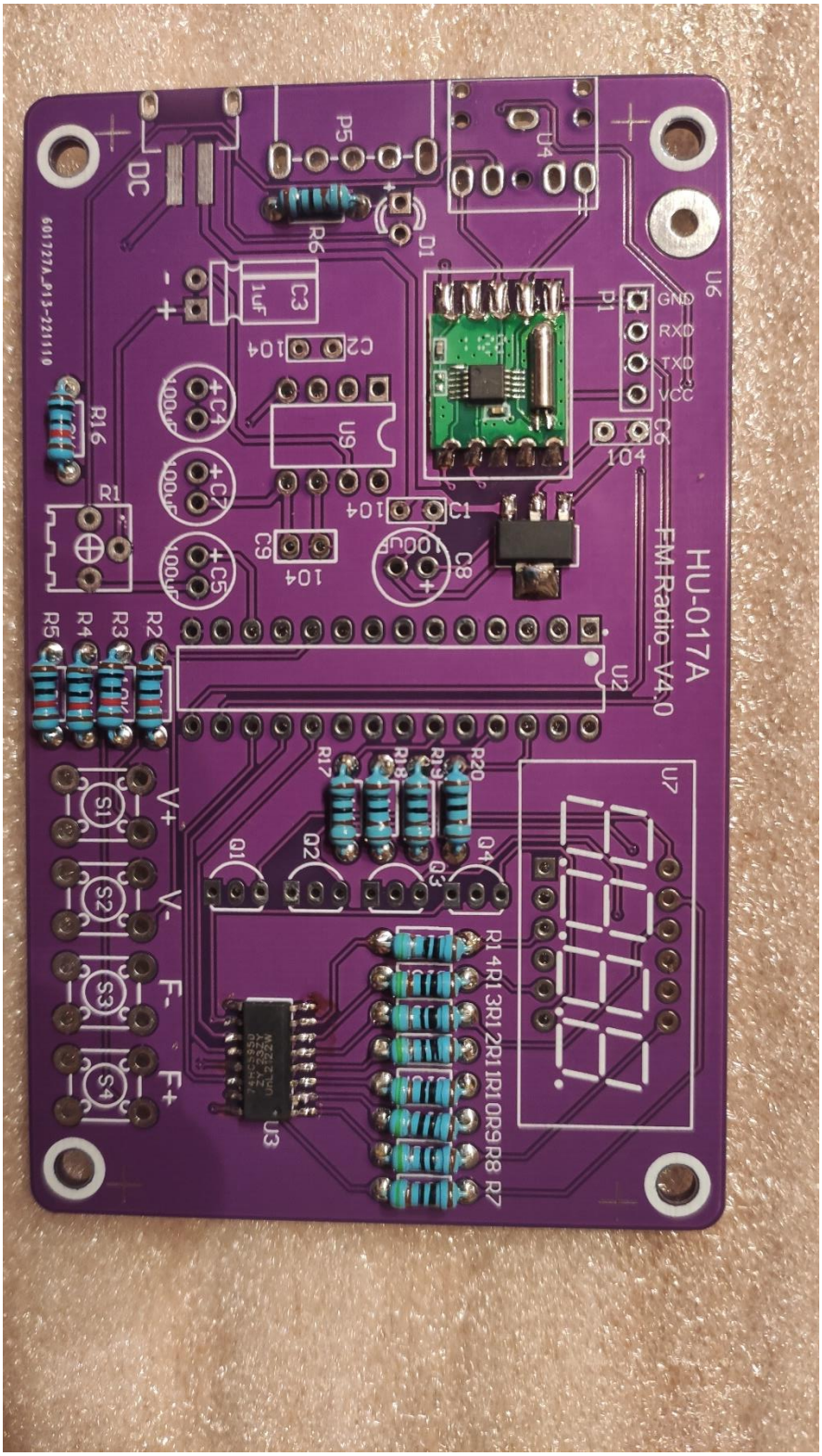

There are no complications for the regulator.

Next:
All of the Metal film resistors can now be soldered.
On the FM Radio PCB, the resistor's values are printed on the installation site. So you can easily find out where to put the right resistor.

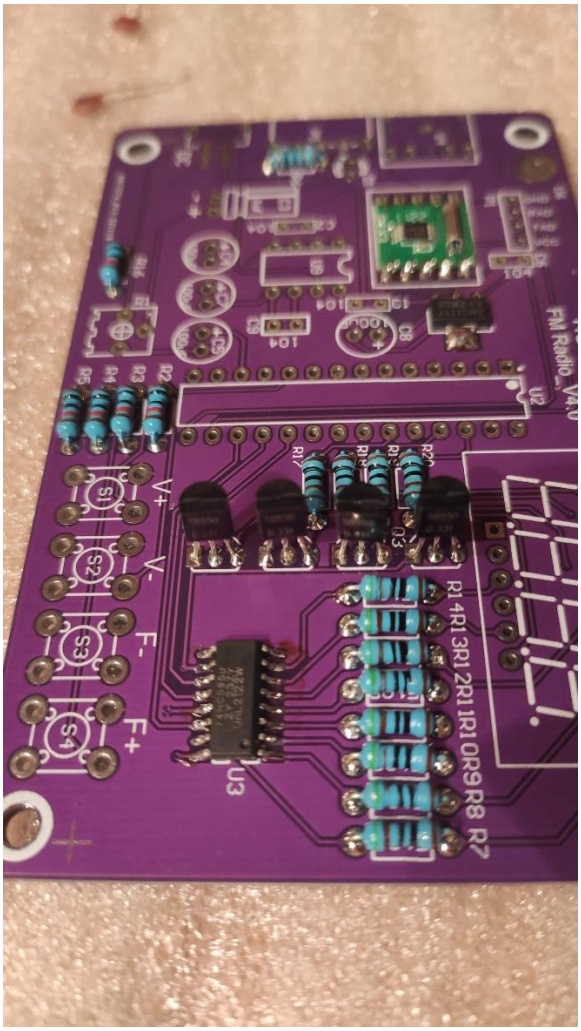
Here's a help:

| Kleur | Mantisse/waarde | Vermenigvuldingsfactor | Tolerantie | Temperatuurcoëfficient | Ezelsbruggetje |
|---|---|---|---|---|---|
| zilver | | $10^{-2}$ | 10% | | |
| goud | | $10^{-1}$ | 5% | | |
| zwart | 0 | $10^{0}$ | | 250 ppm/K | Zij |
| bruin | 1 | $10^{1}$ | 1% | 100 ppm/K | BRengt |
| rood | 2 | $10^{2}$ | 2% | 50 ppm/K | ROzen |
| oranje | 3 | $10^{3}$ | | 15 ppm/K | Op |
| geel | 4 | $10^{4}$ | | 25 ppm/K | GErrits |
| groen | 5 | $10^{5}$ | 0,5% | 20 ppm/K | GRaf |
| blauw | 6 | $10^{6}$ | 0,25% | 10 ppm/K | Bij |
| violet | 7 | $10^{7}$ | 0,1% | 5 ppm/K | Vles |
| grijs | 8 | $10^{8}$ | 0,05% | 1 ppm/K | GRIJS |
| wit | 9 | $10^{9}$ | | | Weer |




Place hem all so, that they all face the same direction.

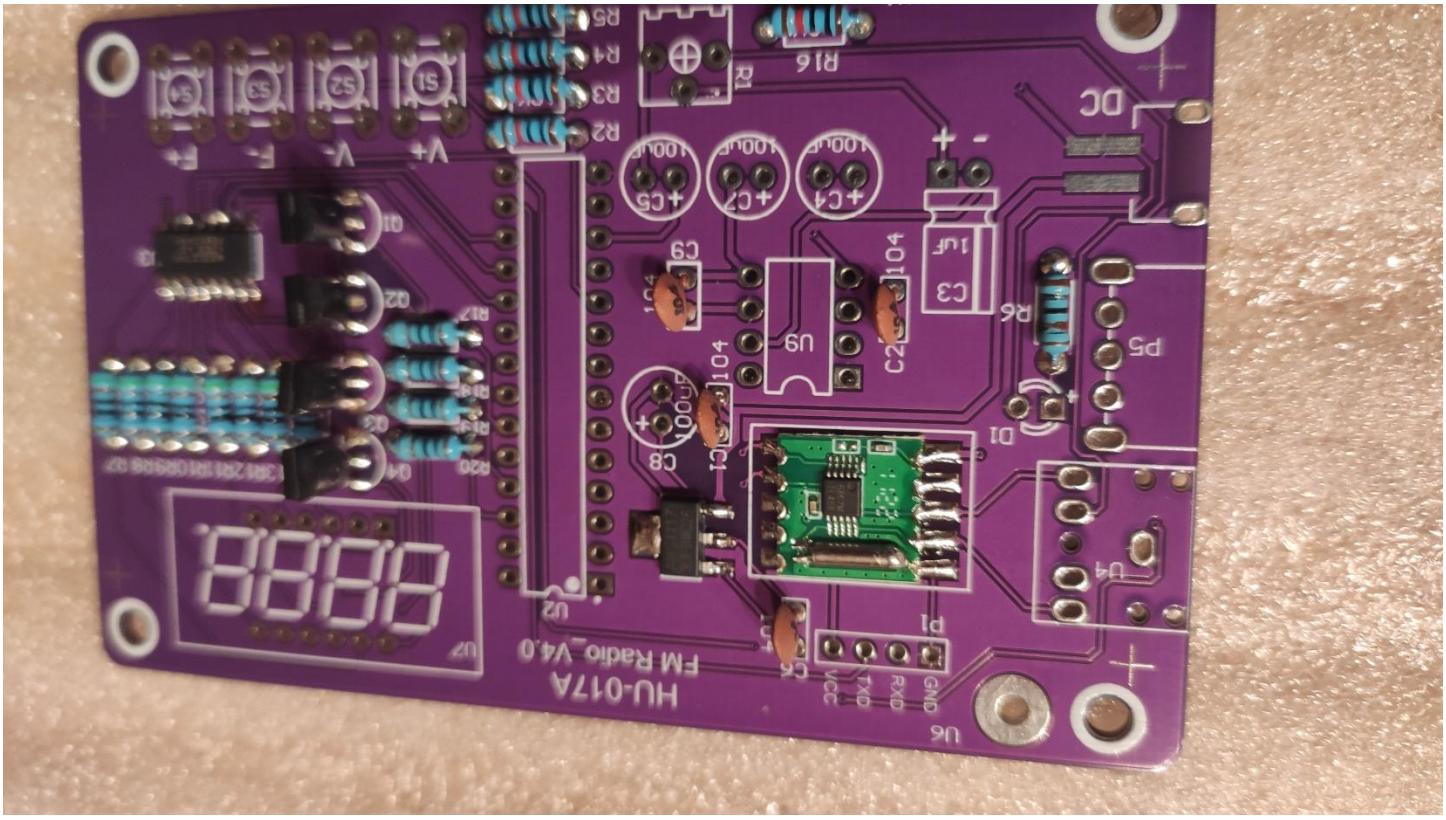
Next:
Solder all transistors on the PCB.




Be careful while soldering the transistors on the PCB, they need to bee cooled a bit during the soldering process!
So put a clamp on each leg  before you start soldering them

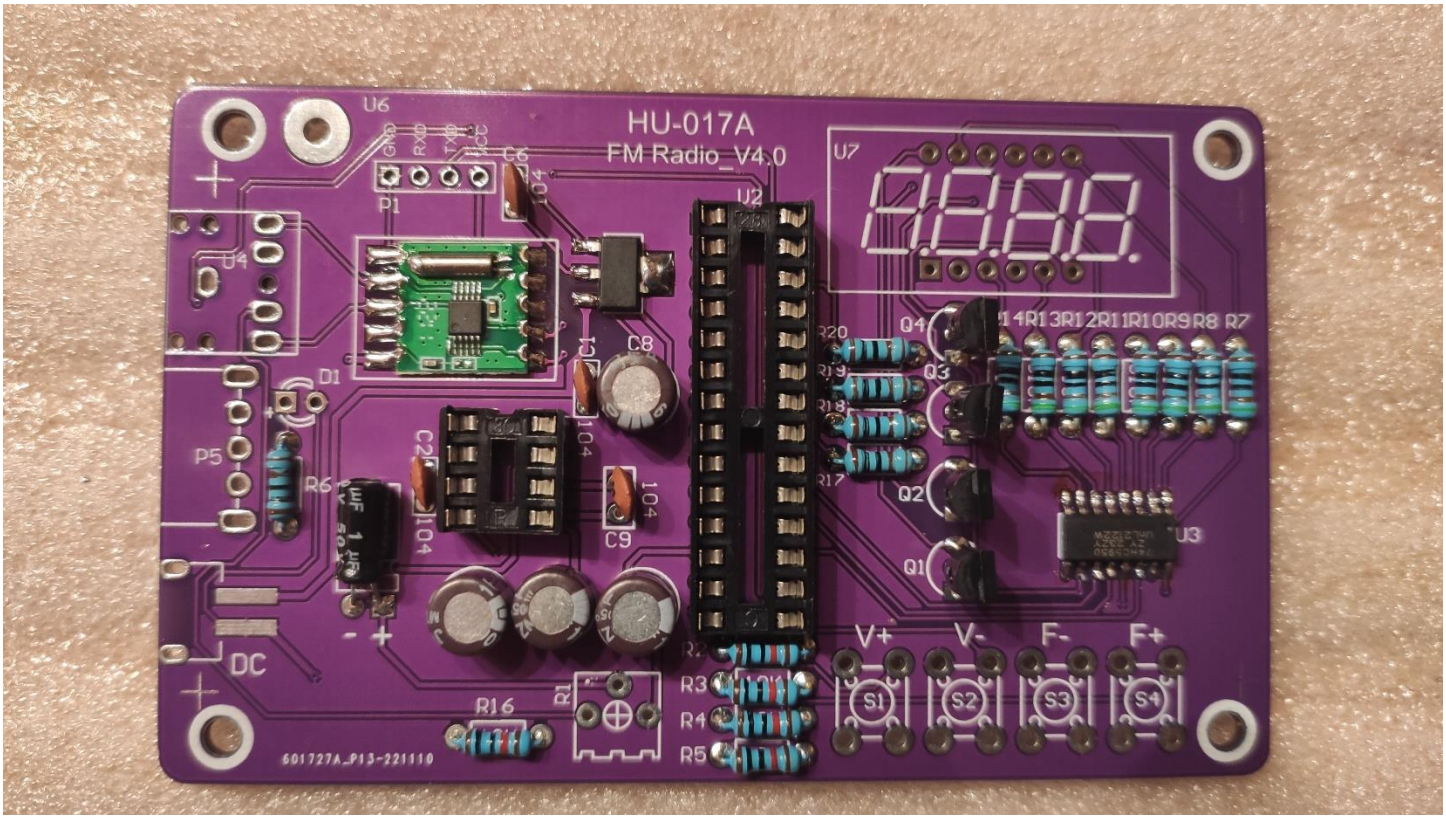
Next:
the ceramic capacitors can be soldered, ceramic capacitors do not have polarity!
On the PCB you find the printed values for the capacitors. 100nF , on the PCB is printed “104”



Next:

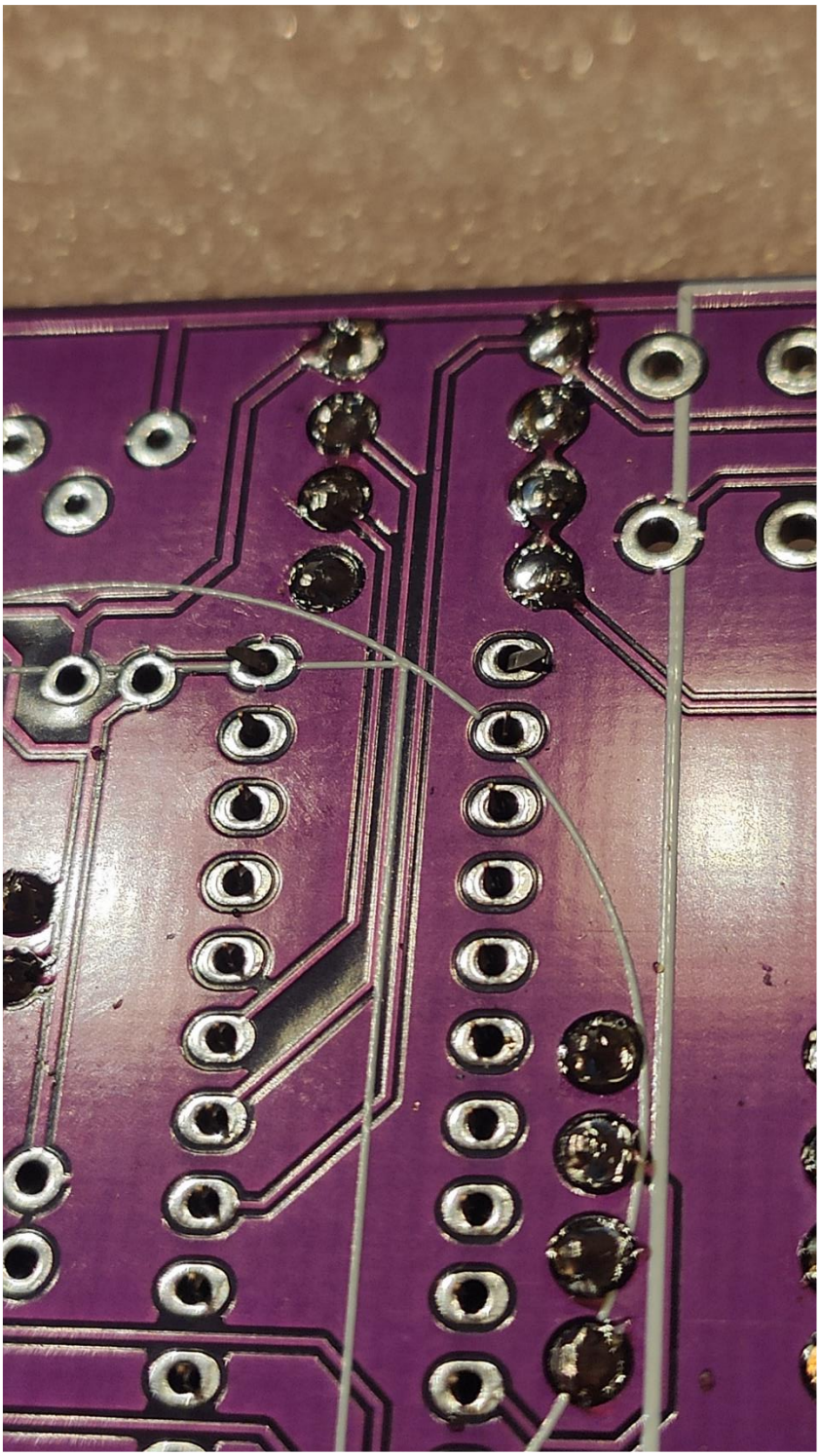
The Aluminum electrolytic capacitors **do have polarity**, the positive have the longer lead than the negative. Aluminum electrolytic capacitor, a band with white color is pointing the negative lead.




After the ELco's Solder also the IC base sockets for item U2 and U9.

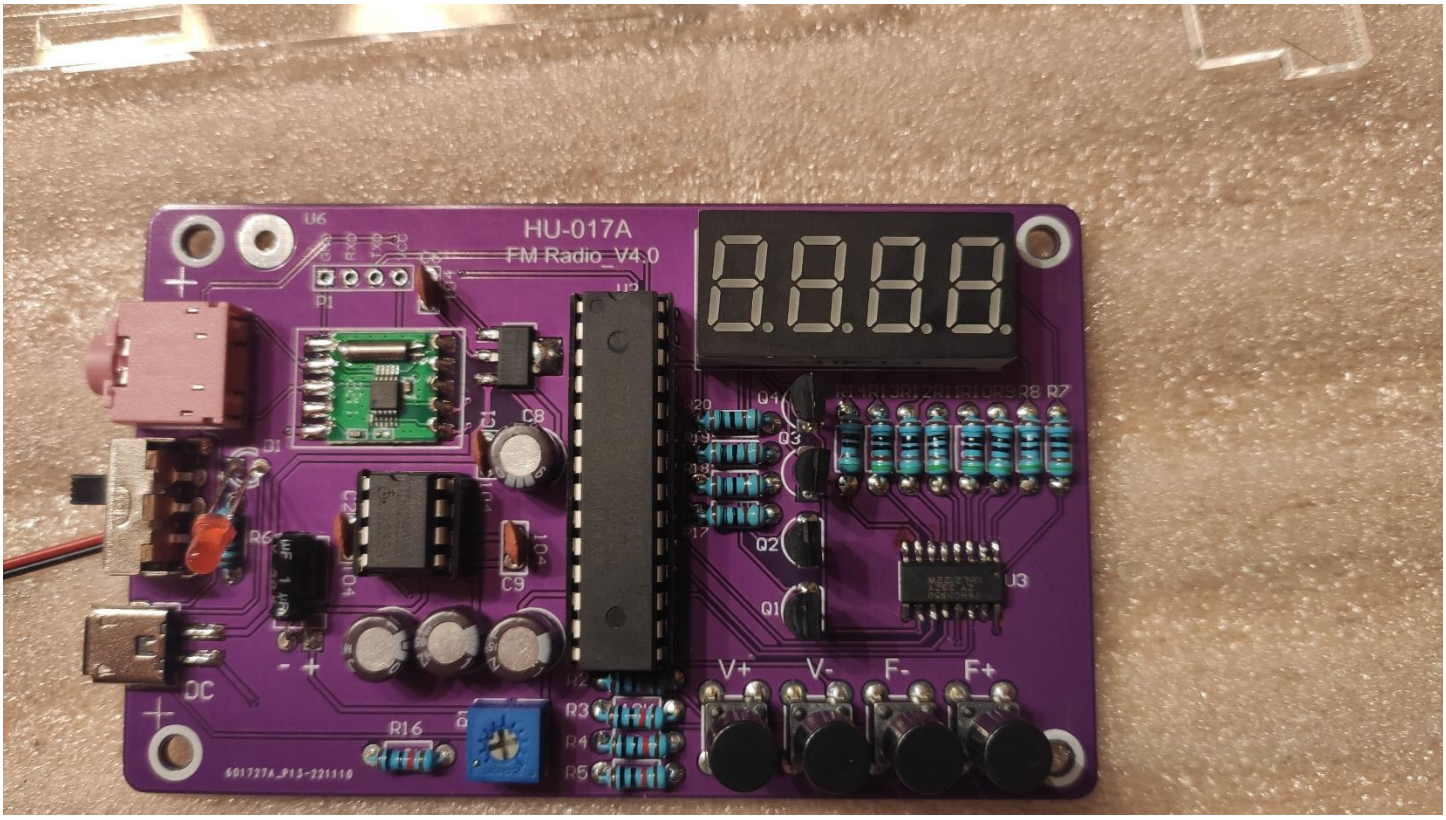
Bend several pins of the socket, so that you can easily solder the socket without falling out of the pcb.



Next is all the rest:

The light-emitting diode have polarity, like the Aluminum electrolytic capacitor, the positive have the longer lead than it negative.

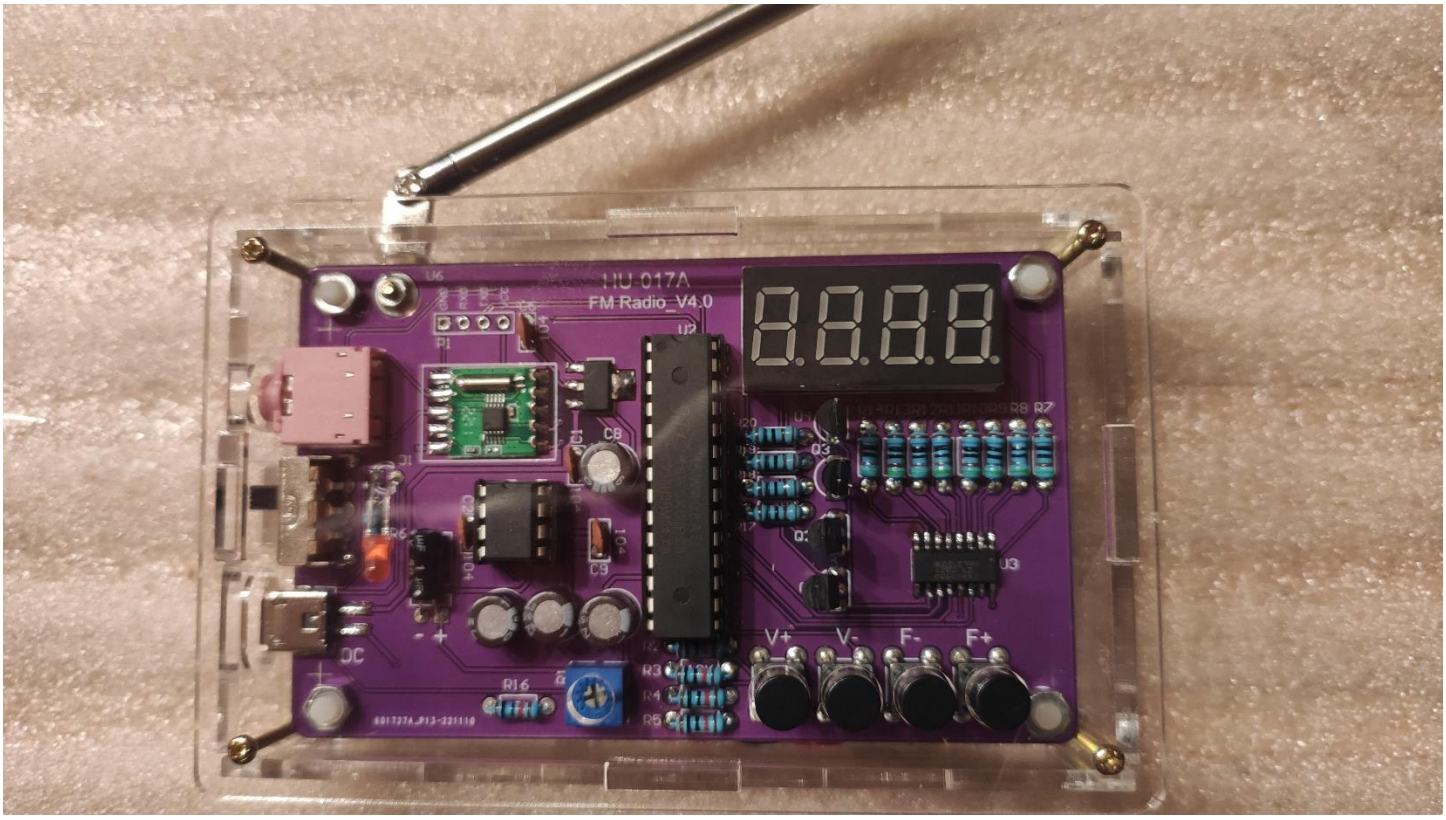



Here is the finished board.

As for the IC's: gently bend the pins straight, before forcing it into the socket. It must fit precisely, before pressing it inside the pins sockets. This takes a certain force to do.

The antenna is one of the last items to assemble onto the board,
The antenna has a nut and bold to assemble it, but it is recommended to solder it as well.

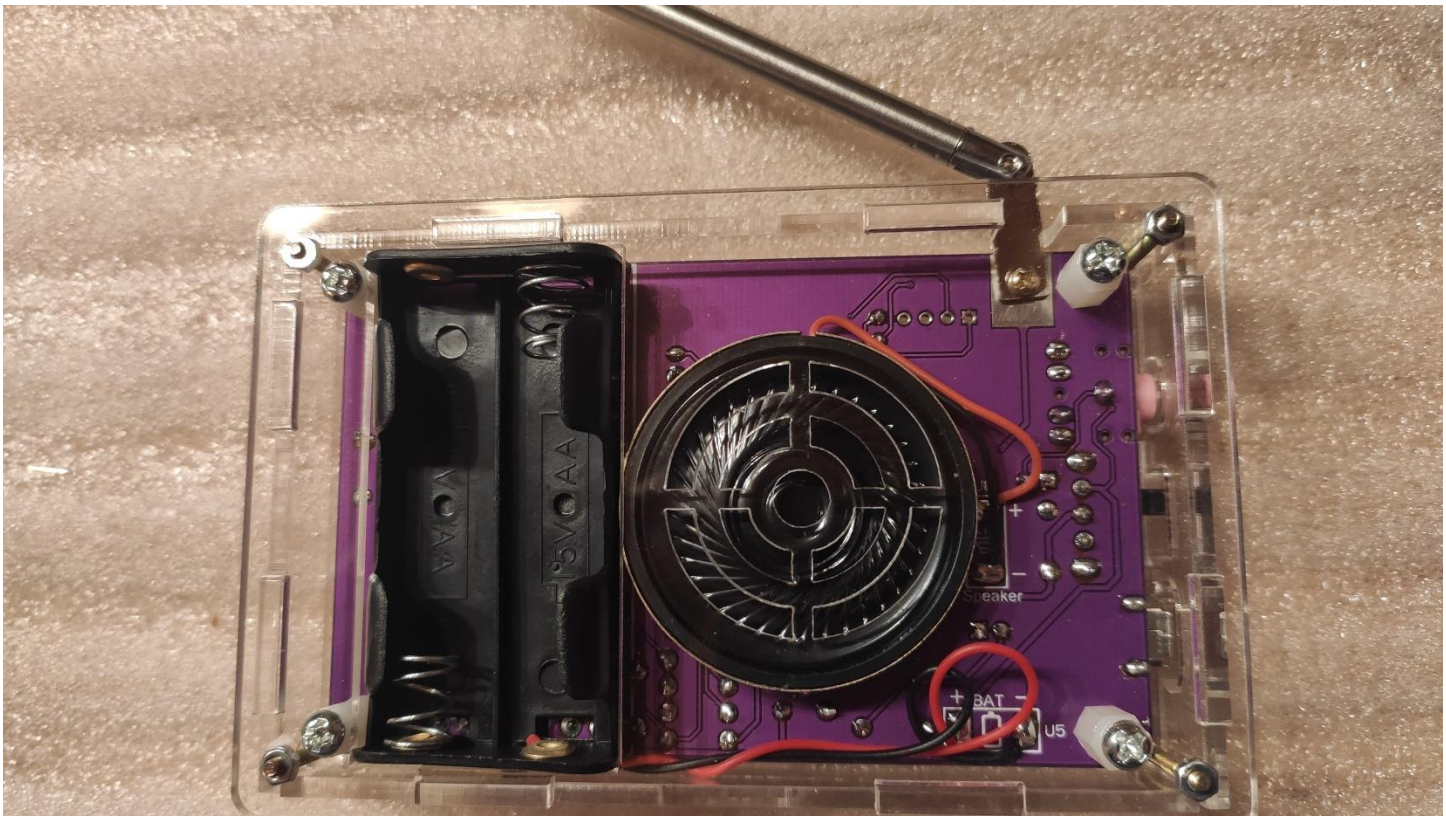


The last items are the Speaker and the Battery holder.

Use the sticky tape for fix it onto the board.
Normally the red wire goes to the plus (+) and the black wire to the Minus (-)

2 AA batteries are needed in order to operate the Radio.



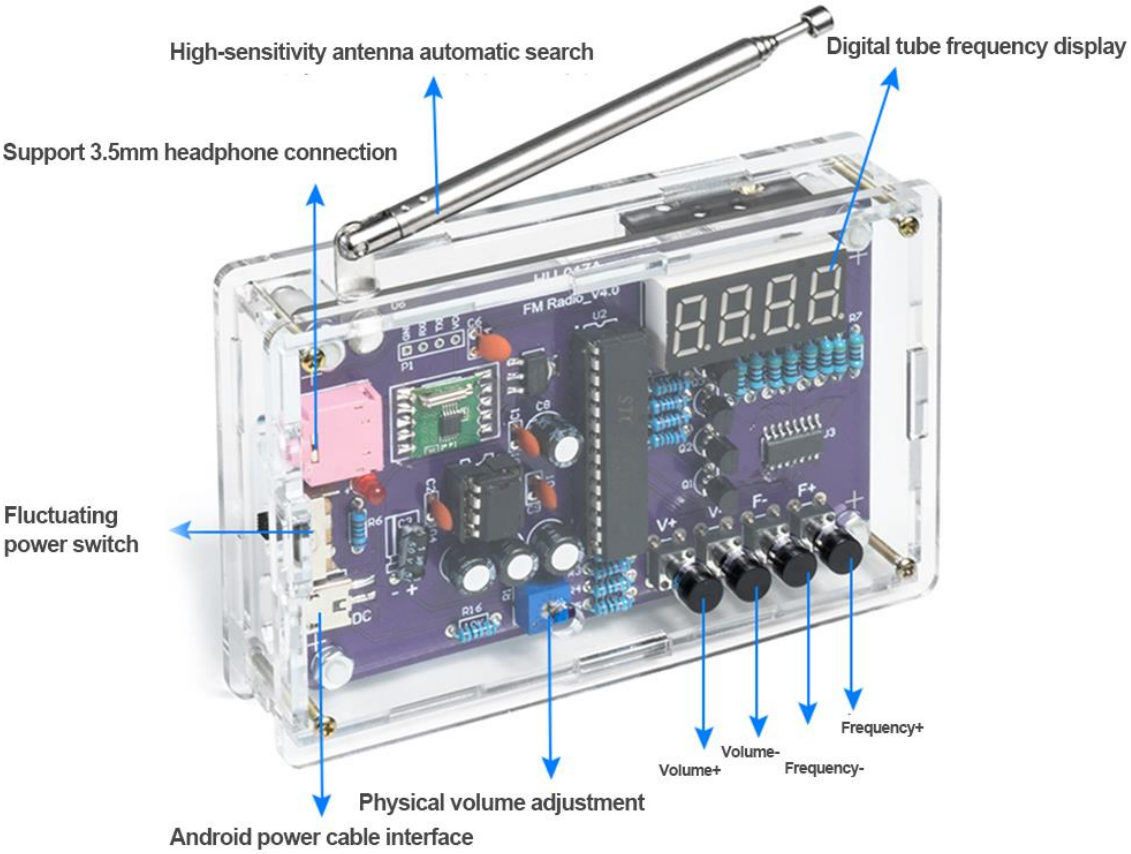

## 1.4 The FM Radio operating instructions:

Input voltage: DC 3 – 5V (Recommended power supply is 5Vdc, or a USB charger)

### 1.4.1 Switch the Radio on

If you have 2 batteries inserted, switch the main switch (item P5) to the on position.
You should hear a noise immediately.




**Dual power supply: 5V mobile phone charger or two No. 5 dry batteries**

**Frequency range: 87108MHz**

Above you will find the explanation about the radio functions.
Press and hold the buttons will activate the in- or decreasement of volume and or frequency.
Al can be read on the small numeric display.

**Happy Radio listening!**