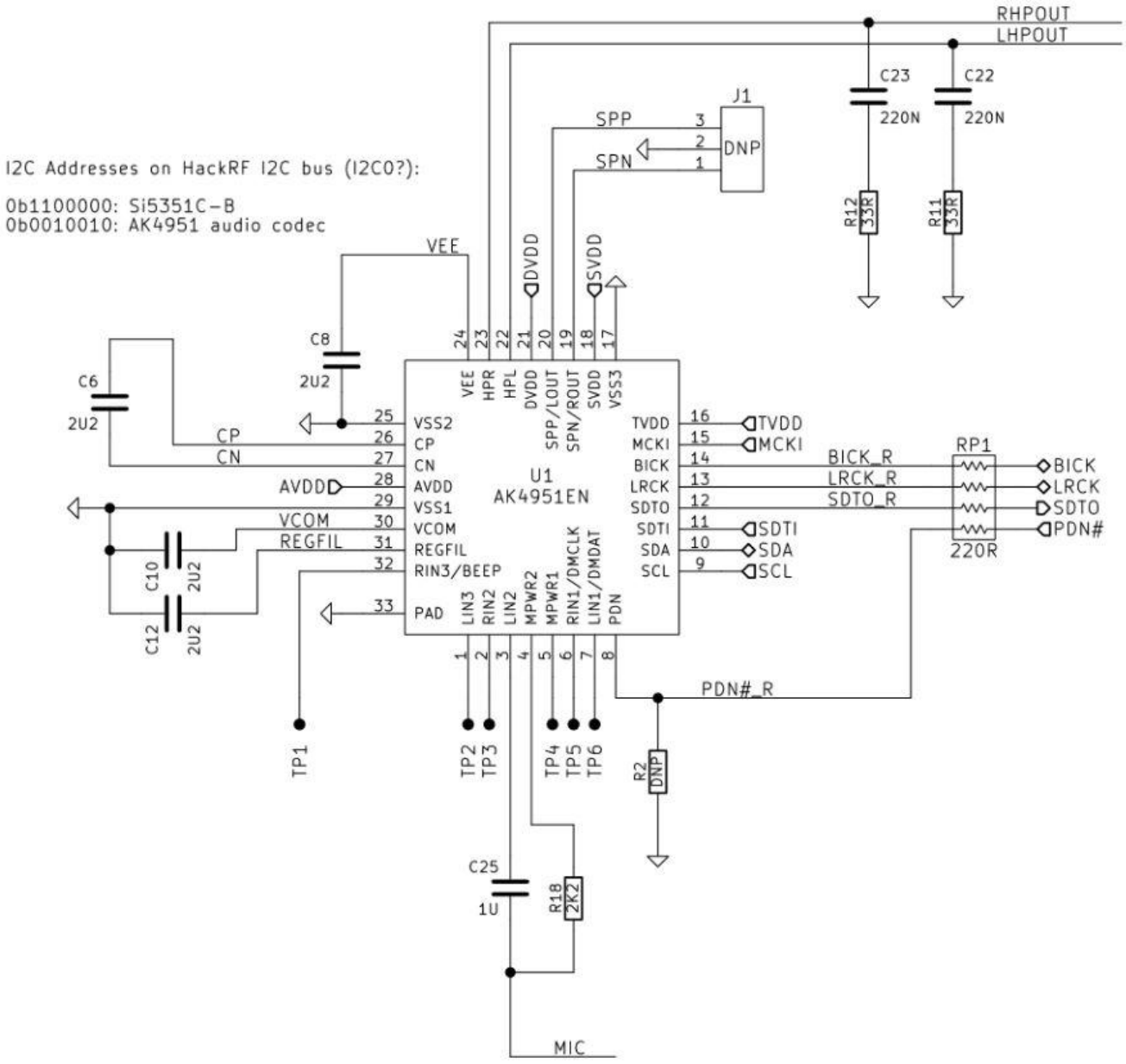
Internal microphone modification for HackRF Portapack H1

The original schematic allows connecting only external mic via 3.5 mm audio plug. This is a little bit complicated and not portable, because adds external wires/cables. We would like to have something like “walkie-talkie”, so that “everything is included”. Thanks to James Shao for his contribution, who wrote the code activating internal mic in software.

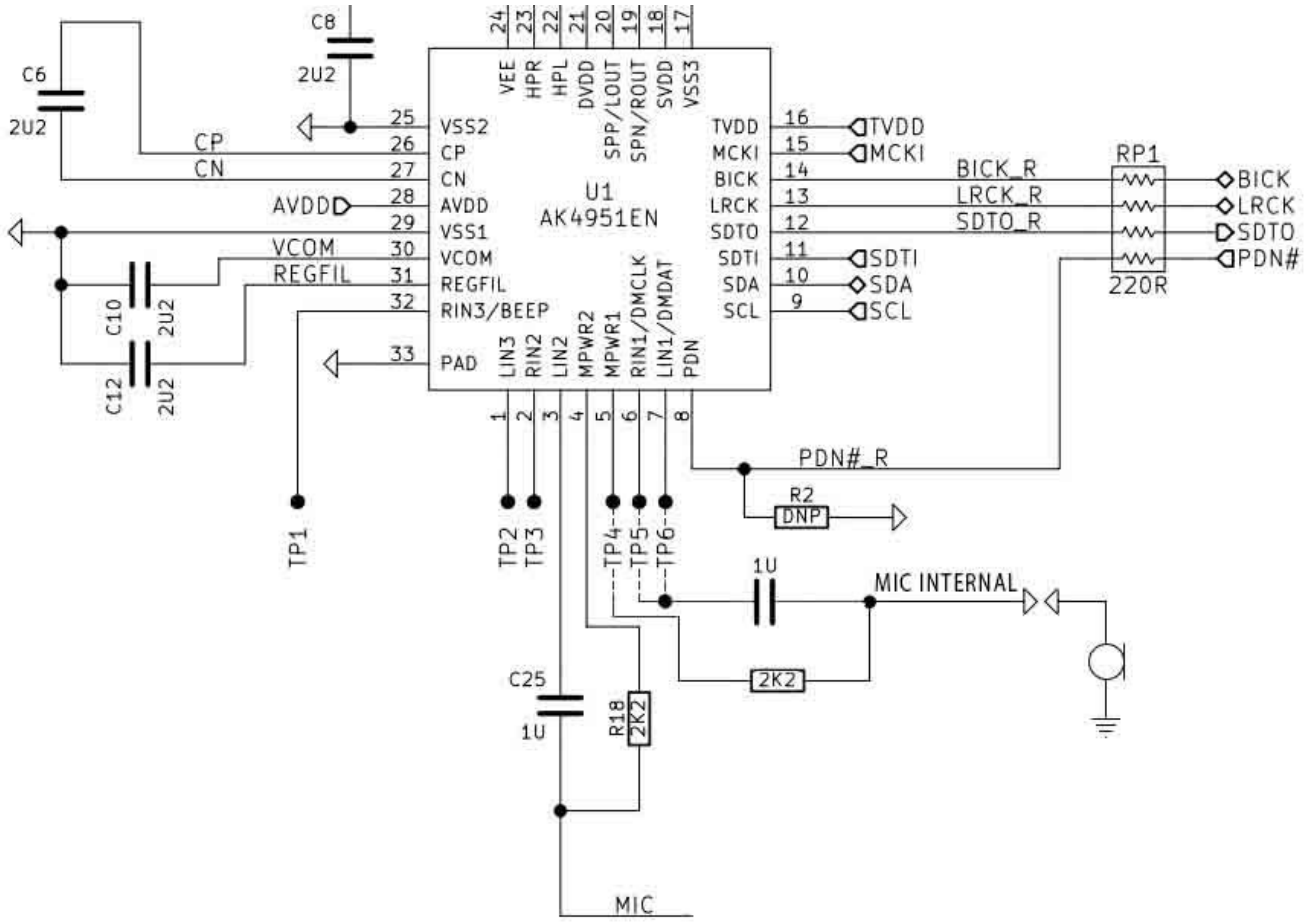
But what about hardware? Let’s see what we have. The original audio subsystem schematic is depicted on **pic.1.**



Pic 1. Original audio subsystem of portapack H1

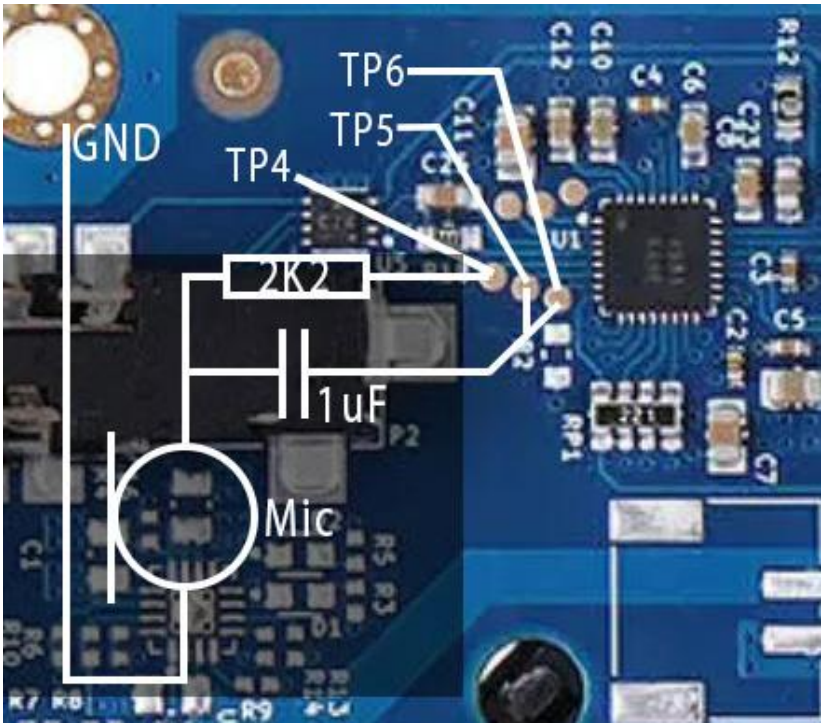
As you can see external mic is connected to 3 and 4 pins of AK4951EN. Pin 3 is audio in, and pin 4 is power for electret microphone. Let’s see what are pins 5, 6 and 7. They are used for

audio input as well. Pin 5 is power for mic, and pins 6, 7 are audio inputs (LIN1 – left, RIN1 – right channel). Let add capacitor and resistor to schematic as it made for external mic, and we get the second working audio input. The modification schematic is below on **pic.2.**



Pic 2. The modified schematic for internal mic

There are 3 test points (TP4, TP5, TP6) on Portapack H1 PCB near the audio chip AK4951EN. We need to connect 1uF capacitor to TP5 and TP6, then 2,2K resistor to TP4, and then connect resistor and capacitor together. This connection point becomes input for internal microphone. The **Pic 3** shows the location of test points 4, 5, 6 on PCB and explains the modification. It's very simple as you can see.



Pic 3. Location of test points