AFEDRI-SDR-Net (rev 0.0 , rev 1.0, rev 2.0 и rev.2.1.) differential buffer amplifier modification

(remove U1 - THS4521 chip).

The information that is represented in this document describing modification of differential buffer amplifier circuits and relevant to AFEDRI SDR-Net receivers of next revisions: 0.0, 1.0, 2.0, 2.1. This modification allows to decrease to 10dB - 15dB level of IP3 products that applied to Front-End's ADC input. It was found that source of higher than expected IP3 products level was in THS4521 chip. So this amplifier was canceled from electric circuit in AFEDRI SDR-Net rev.2.2 and up. This documents shows how to do same changes for older SDR revisions.

Please check the Figure 1. For reference and text below that is describing the modification process:
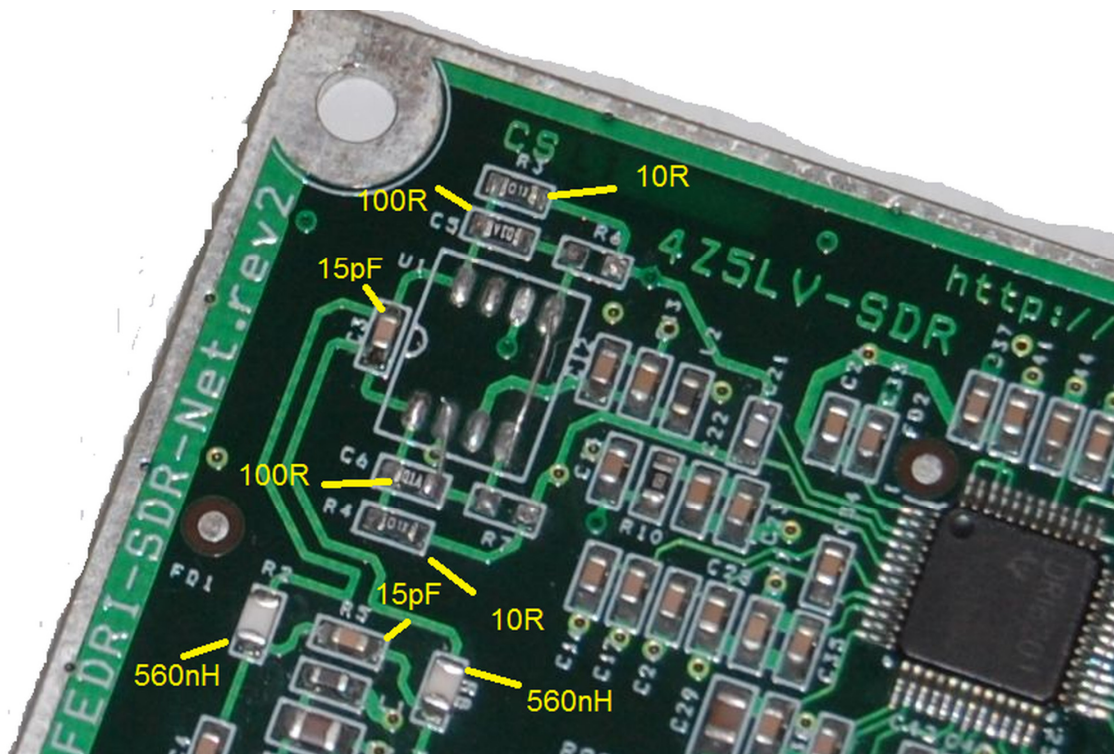

Figure 1 Picture of modified PCB board .

Short description of modification process:

1. Remove U1 chip (THS4521) from PCB

2. Remove next resistors: R2, R3, R4,R5, R6, R7, R8 (all parts have SMT case 0603)

3. Solder (SMT 0603) inductors 560nH in place of R2, R8.

   NOTE: Users that use SDR for alias bands reception – should solder resistors 0 Ohm (SMT 0603).

4. Solder capacitor (SMT 0603) in place of R5 resistor

   NOTE: Users that use SDR for alias bands reception – should not solder this capacitor

5. Solder capacitor (SMT 0603) in place of C3 capacitor

   NOTE: Users that use SDR for alias bands reception – should not solder this capacitor

6. Solder (SMT 0603) 10 Ohm resistors in place of R3, R4

7. Solder (SMT 0603) 100 Ohm resistors in place of capacitors C5, C6

8. Solder short cut jumper (wire-up) between the pads number 4 and 5 of U1 (see Figure 2)

9. Solder short cut jumper (wire-up) from the pad number 2 of U1 to right pad of capacitor C6 (see Figure 2). (there should be installed resistor 100 Ohm as described in paragraph 7).
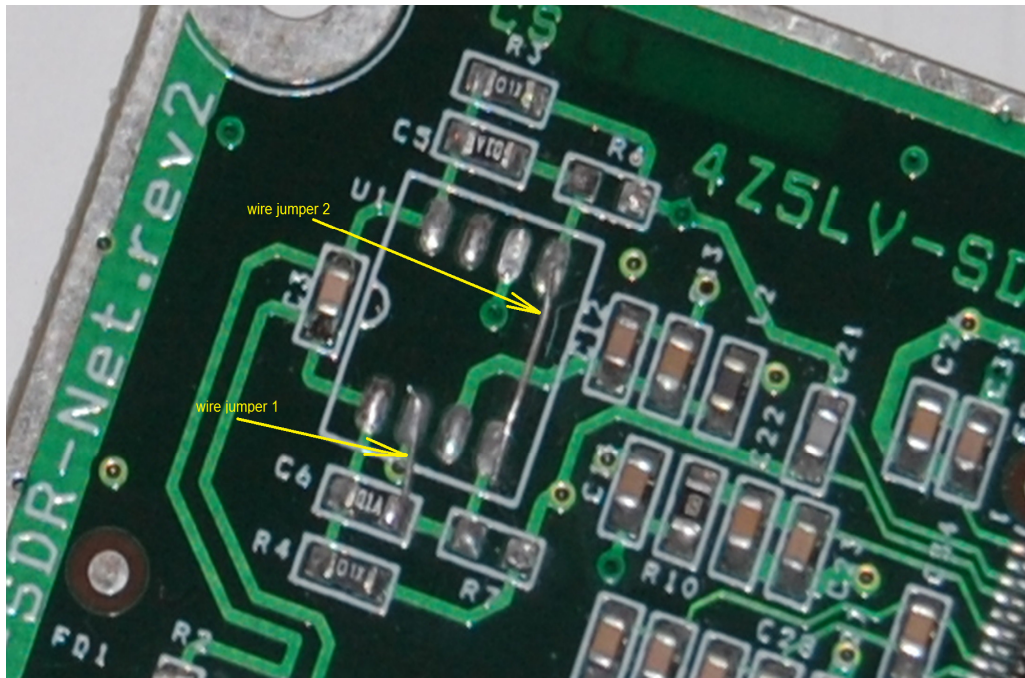
Figure 2 Short cut jumpers soldering (wire-up).