# Modification of the Noiseblanker in the K2

In my K2 (S.-Nr.:3191) i found, that the noiseblanker seems to be not very sensitive. The threshold-switching via the LEVEL-button is not effective – the sensitivity is nearly the same in both LEVEL-settings. I connected my ns-pulse-generator to the antenna-input of the K2, viewed the voltages in the KNB2 - and found the reason for this problem (picture 1 and 3).
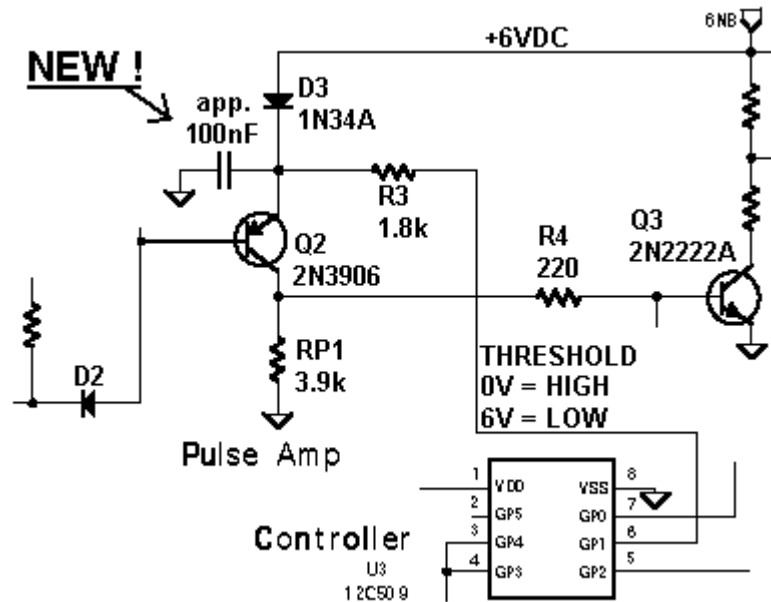
Picture 1: Relevant part of KNB2

The problem:
When switching to LEVEL = LOW, the voltage at the emitter of Q2 is increased to 6VDC via R3 and lowering the (negative) threshold of Q2 for the negative pulses, detected by D2. However, the value of R3 is too high compared with R4 (220) and the input-resistance of Q3. Therefore, when Q2 becomes conductive for the duration of the (noise-)pulse, the voltage at it´s emitter decreases by app. 0.4V to a value (5.5VDC) which is very similar to the high level (see the dotted line in picture 3)! This makes the switching to LEVEL = LOW not very effective (picture 3, right side).

The solution:
Add a capacitor to the emitter of Q2 (picture 1) and ground. This stabilizes the emittervoltage for short pulses at 6VDC and makes the LEVEL = LOW much more effective! I found, that the value is not critical and should be app. 100nF/16V. This C is soldered on the bottom of the pcb. I used a small ceramic-type, alternatively a SMD-type 0805 can be used (picture 2). Look for sufficient space to the transistor Q22 on the rf-board and it´s heatsink! Now the oscillogram shows an ideal constant voltage at Q2!

The result:
With this mod, there is a measured difference in LEVEL LOW and LEVEL HIGH of 6dB now. Of course, the new LOW-setting might be too sensitive for crowded bands – but then use the HIGH-setting. The LOW-setting is good for quiet bands with some small noise. With this modification, there is now a real choice between two NB-threshold-settings.

The sensitivity of HIGH-setting is NOT changed by this mod!
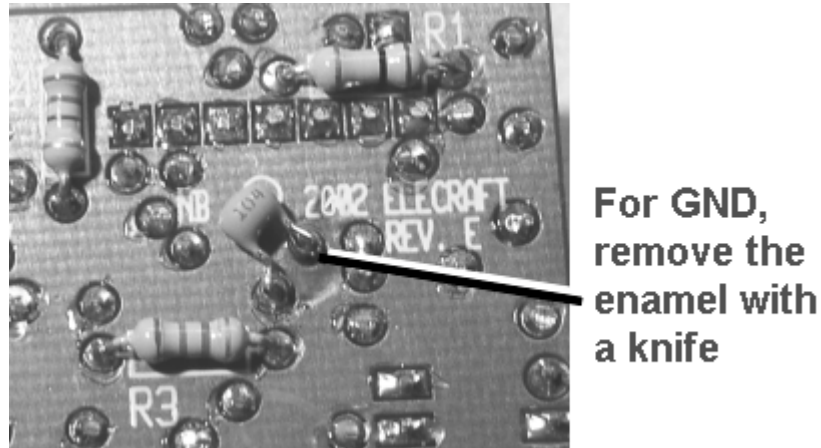
Picture 2: Bottom of KNB2 with the new capacitor
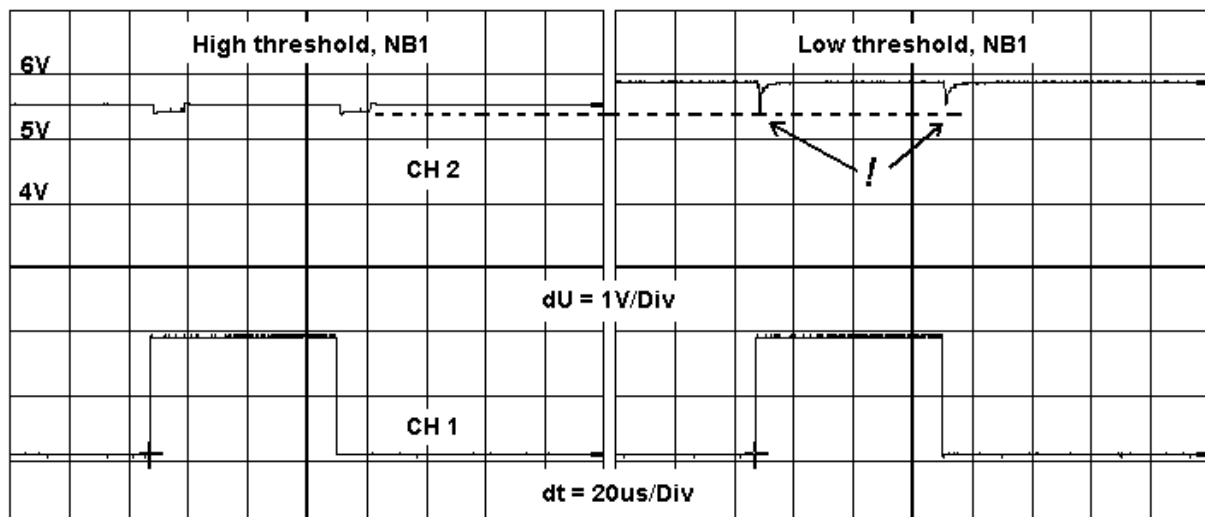
Picture 3: Oszillograms at emitter of Q2 BEFORE MODIFICATION
Upper trace: Emittervoltage at Q2; Lower trace: Input-„noise" with ns-pulsegenerator
Left: High threshold; Right: Low threshold BEFORE MODIFICATION

Note:
This modification is not the best solution for the described problem, but it´s a good compromise. The emittervoltage of Q2 should be DC-stabilized and not only AC-stabilized by a C as proposed here - but this would require a new design of the circuit, which could only be done by Elecraft.

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www.qsl.net/la3za/k2/mod.html