

I'm using my FT-90 in my car for mobile operations. On all testing reports about the FT-90 you'll find that this transceiver has a great and really sensitive receiver.

But not on mine ! I'm using a mechanical short antenna, a radial-less Diamond SG-805N (2m/70cm/23cm), which is mounted on a window holder.

So first I had the effect to have a much better transmission than reception. All my partners were hearing me better than I could hear them. So the antenna was working great but the receiver must be really deaf ! But all test articles gave the receiver a very good and sometimes one of the best receiver sensitivity on all tested mobile rigs. With a much longer Diamond NR-770H the effect was much better cause of the higher signal strength, but the effect was still there.

So what happens ? Here's the answer and the solution.

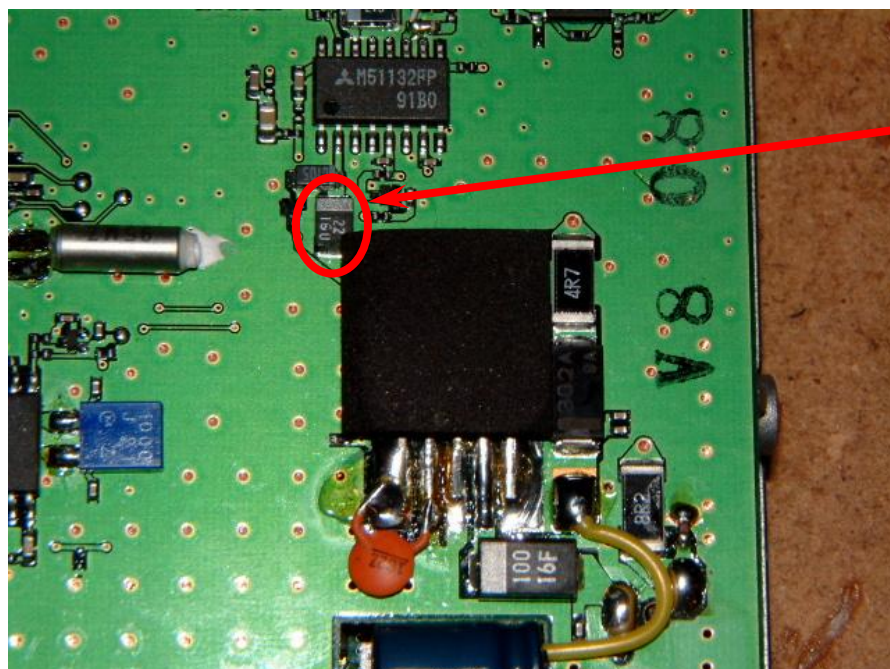
After a lot of tests with various antennas and some comparisons with other rigs I had a look into the FT-90 service manual and found the fault in the schematic.

The fault is in the squelch circuit !

Don't worry, the receiver of the FT-90 is great and really sensitive ! But the tests on the HAM magazines are done with service equipment, that means with a constant signal level and not with mobile fading. That's the great difference between the test articles and the practise mobile usage.

The fault is that the af level is muted from the squelch sometimes on fading signal levels, for sure. **And there's a little delay on the re-opening of the af signal line.** I believe the delay is only in the range of milliseconds but you're loosing too much information of the received signal. It was hard to find out that fault cause the delay on the s-meter display is much higher. So you mainly see kindly stronger or more stable signals than they are in reality. The squelch has multiple opened/closed even when the s-meter was on a apparently stable signal level.

To fix this problem you only must replace one capacitor on the bottom side PCB of the FT-90.



Just remove the SMD electrolytic capacitor C2007 (22 μ F, respective 0,022mF) near the af pa module and **replace it with a ceramic or Sibattit of 1nF (=0.001mF).**

This gives back the fast response time the squelch circuit need to work properly.

The squelch behaviour is impressive faster now than in the original state.

The fault is fixed and now I'm able to work stations with signal levels of approximately S1 – S3 without any interruptions or losses on mobile usage. You don't believe what would be possible now comparing to the original state. The squelch don't have any clattering sound effects, so don't worry. The squelch's working range and its behaviour is totally optimized. **The squelch response time is now optimized for all kinds of received signals.**

Disclaimer • Disclaimer of liability

This modifications mostly need to be done by a electronic specialist who had enough practise and who has knowledge in SMD soldering.
You do the modifications on your own risk !

Radio modifications shown here are provided for properly licensed operators only! The user is solely responsible for making sure that any modifications made to the radio unit must meet all Federal and State Regulations or the Country of use! Liability of damages to any equipment is the sole responsibility of the user! Downloading , viewing, or using any information provided on these pages automatically accepts the user to the terms of this agreement! Modifications are provided for information purposes only!

Although the greatest care has been taken while compiling these documents, we cannot guarantee that the instructions will work on every radio presented.

Copyright

The author intended not to use any copyrighted material for the publication or, if not possible, to indicate the copyright of the respective object. The copyright for any material created by the author is reserved. Any duplication or use of objects such as diagrams, sounds or texts in other electronic or printed publications is not permitted without the author's agreement.

Some circuit details are password-protected because of legal reasons. Please contact me via e-mail.

If your company would like to provide technical information to be featured on this pages please contact me at: dg2iaq@web.de