

Modification Sheet

Jochen Heilemann (DG2IAQ)
German Amateur Radio Station

© 09.2003 Jochen Heilemann
All rights reserved

Yaesu FT-90R

Version 1.3

VHF-/UHF Mobile Transceiver

Introduction

I started on doing modifications of CB- and HAM-radios since 1980 at the age of 12 years. I mostly wasn't satisfied with the sound of the modulation or reception of my rigs. This is normally founded by restrictions of the local law or by rationalize productions. Only expensive high-class amateur radios have a good sound on their basic state.

Therefore there must be some possibilities for improvements. So I learned the basics of RF electronics on myself and did a lot of modifications until today and I would like to spend my experiences to all other electronic interested people, CB- or HAM-radio stations.

You have to recognize your local laws. Mostly modifications aren't allowed by the local law or by the manufactures. So you do it on your own risk. Also the brandnew HAM rigs are mostly build with a lot of teeny-weeny SMD parts. You have to use special equipment and you also must have a great expert knowledge. So some modifications aren't for only hobby electronic technicians.

So this and all of my Modification Sheet are for education purposes only !

All pix with Fujifilm „FinePix 6800 Zoom“ on resolution „6M/Normal“. Pictures reduced for this publication to 640x480.

Modification Sheet

Jochen Heilemann (DG2IAQ)
German Amateur Radio Station

© 09.2003 Jochen Heilemann
All rights reserved

Yaesu FT-90R

Version 1.3

VHF-/UHF Mobile Transceiver

Overview

TX

- C2080 → 22nF parallel more bass
- C2051 → 2,2nF more heights
- C2039 → remove less muddy sound, no re-injection (low-pass filter)

RX

- C2084 → 100nF parallel more bass
- C2034 → 4,7nF more heights
- C2032 → 4,7nF (or 1nF for more heights) more heights, better re-injection (low-pass filter)
- C2014 → 2,2nF more heights
- C1244 → 4,7nF more heights (only AM-RX)
- C2003 → 47µF parallel more basses out of af amp Q2004
you need a 47µF/16V smd capacitor or a very small other one
(very less space between pcb and cover)
- C2007 → 100nF fast squelch response
- C2003 → 470µF more basses on af pa
(fu 400 Hz → 85 Hz on 4 ohm speakers)

Modification Sheet

Jochen Heilemann (DG2IAQ)
German Amateur Radio Station

© 09.2003 Jochen Heilemann
All rights reserved

Yaesu FT-90R

Version 1.3

VHF-/UHF Mobile Transceiver

General

Cause of the usage of SMD parts in this transceiver you should do these modifications only by using the service manual and pcb layout to find the correct parts !!

Modification Sheet

Jochen Heilemann (DG2IAQ)
German Amateur Radio Station

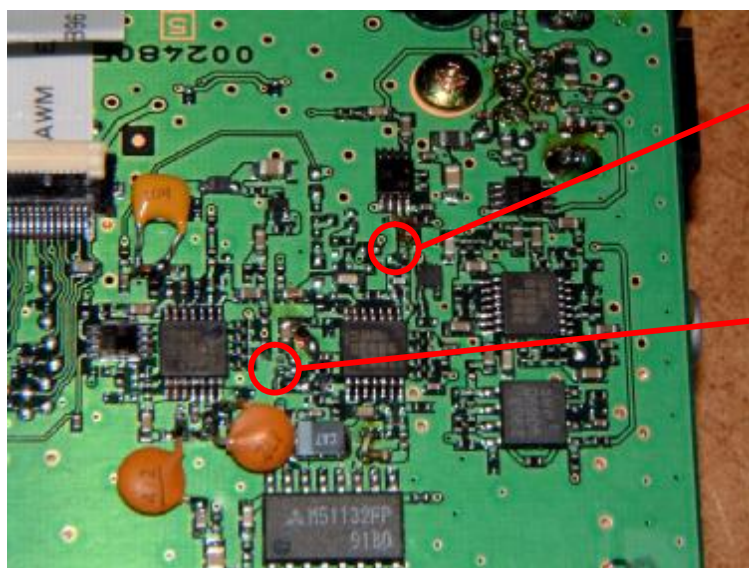
© 09.2003 Jochen Heilemann
All rights reserved

Yaesu FT-90R

Version 1.3

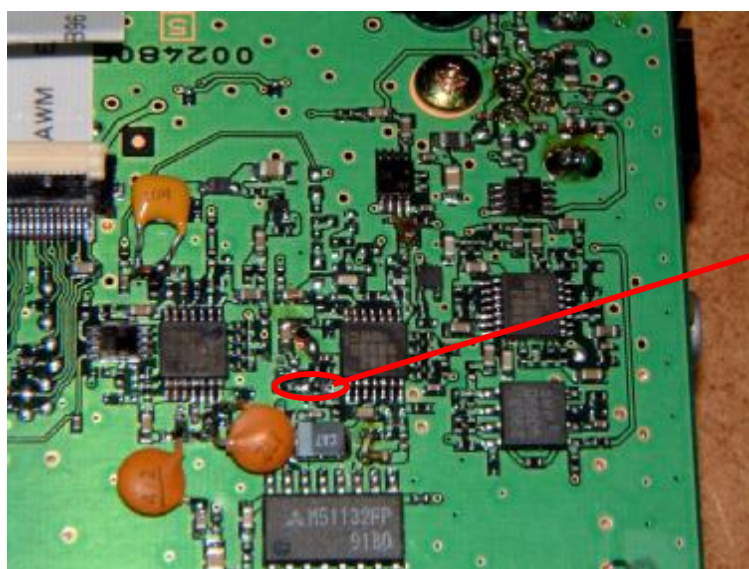
VHF-/UHF Mobile Transceiver

Transmitter



C2080 → 22nF parallel

C2051 → 2,2nF



C2039 → remove

Modification Sheet

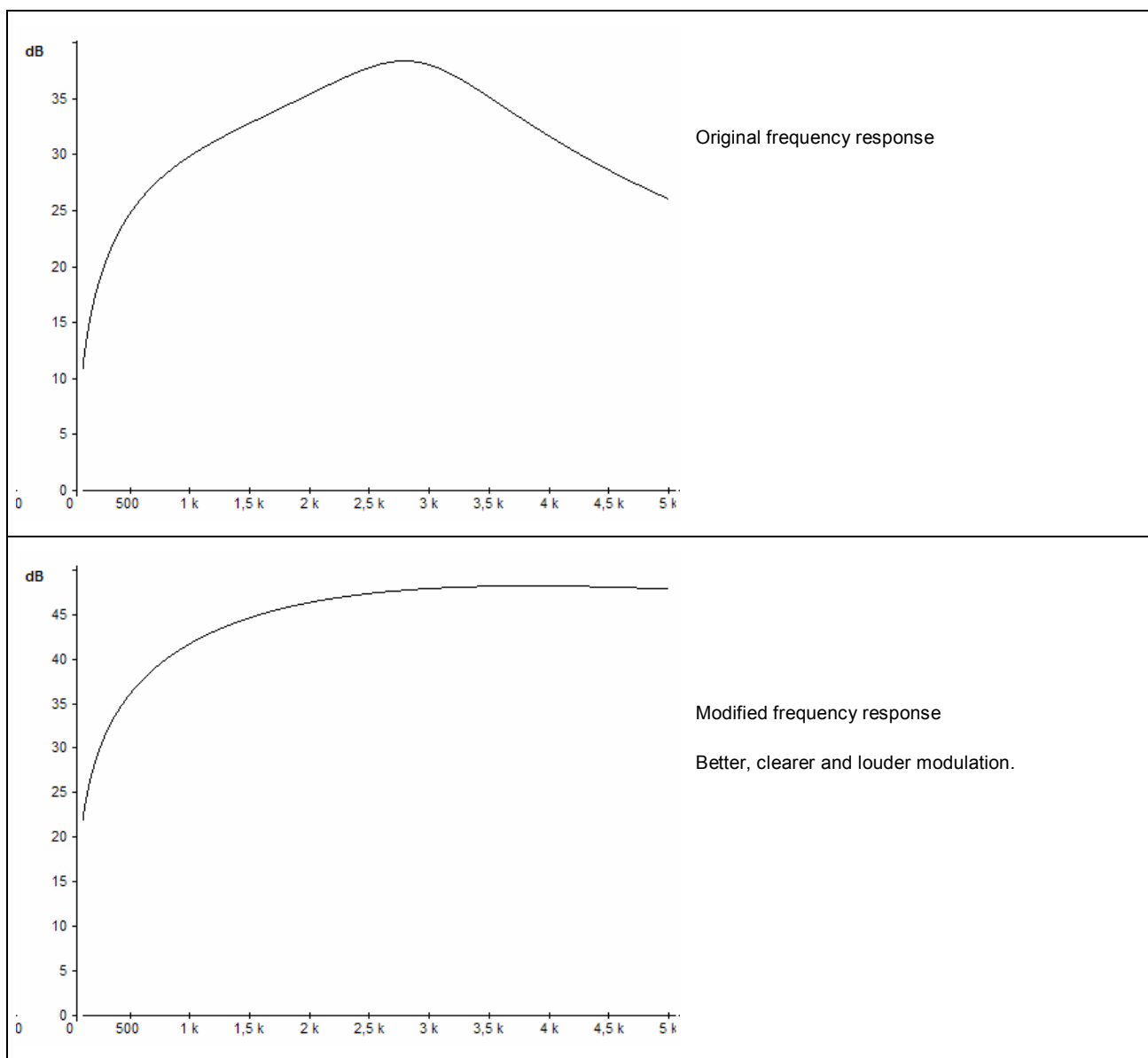
Jochen Heilemann (DG2IAQ)
German Amateur Radio Station

© 09.2003 Jochen Heilemann
All rights reserved

Yaesu FT-90R

Version 1.3

VHF-UHF Mobile Transceiver



Modification Sheet

Jochen Heilemann (DG2IAQ)
German Amateur Radio Station

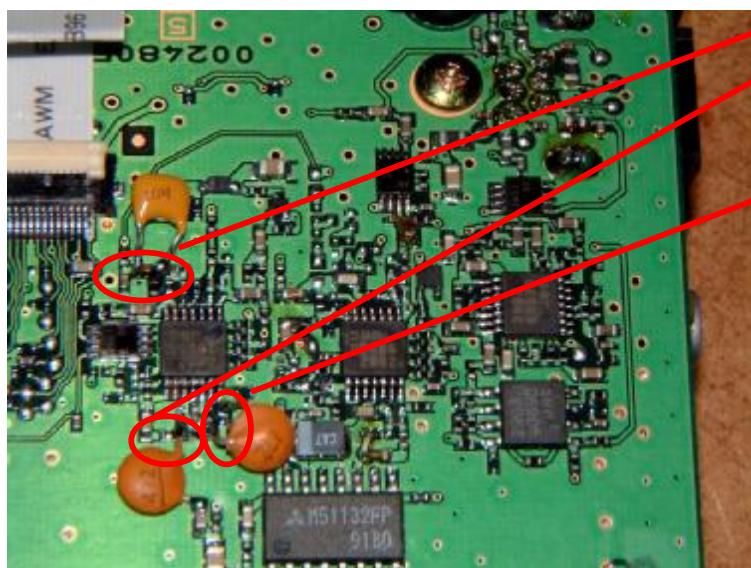
© 09.2003 Jochen Heilemann
All rights reserved

Yaesu FT-90R

VHF-UHF Mobile Transceiver

Version 1.3

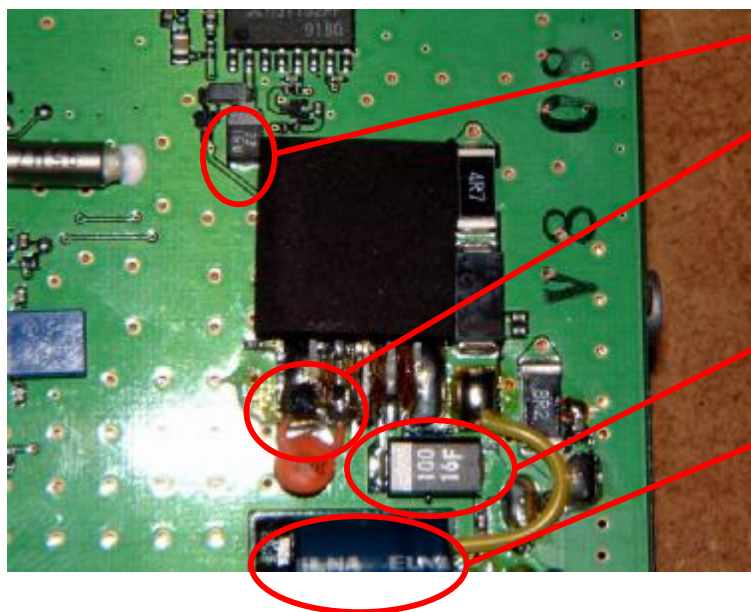
Receiver



C2084 → 100nF parallel

C2034 → 4,7nF

C2032 → 4,7nF



C2007 → 100nF

C2014 → 1,8 nF

C2003 → 470μF
(pluspole is on the left side)

C2001

The problem is that you don't have enough space for a bigger capacitor as C2003. So in mine FT-90 I changed the connections and the wiring of C2001 and C2003. The 470μF is working as my new C2003 and the 100μF is working as my new C2001.

The average of the more bass sound is great !

Modification Sheet

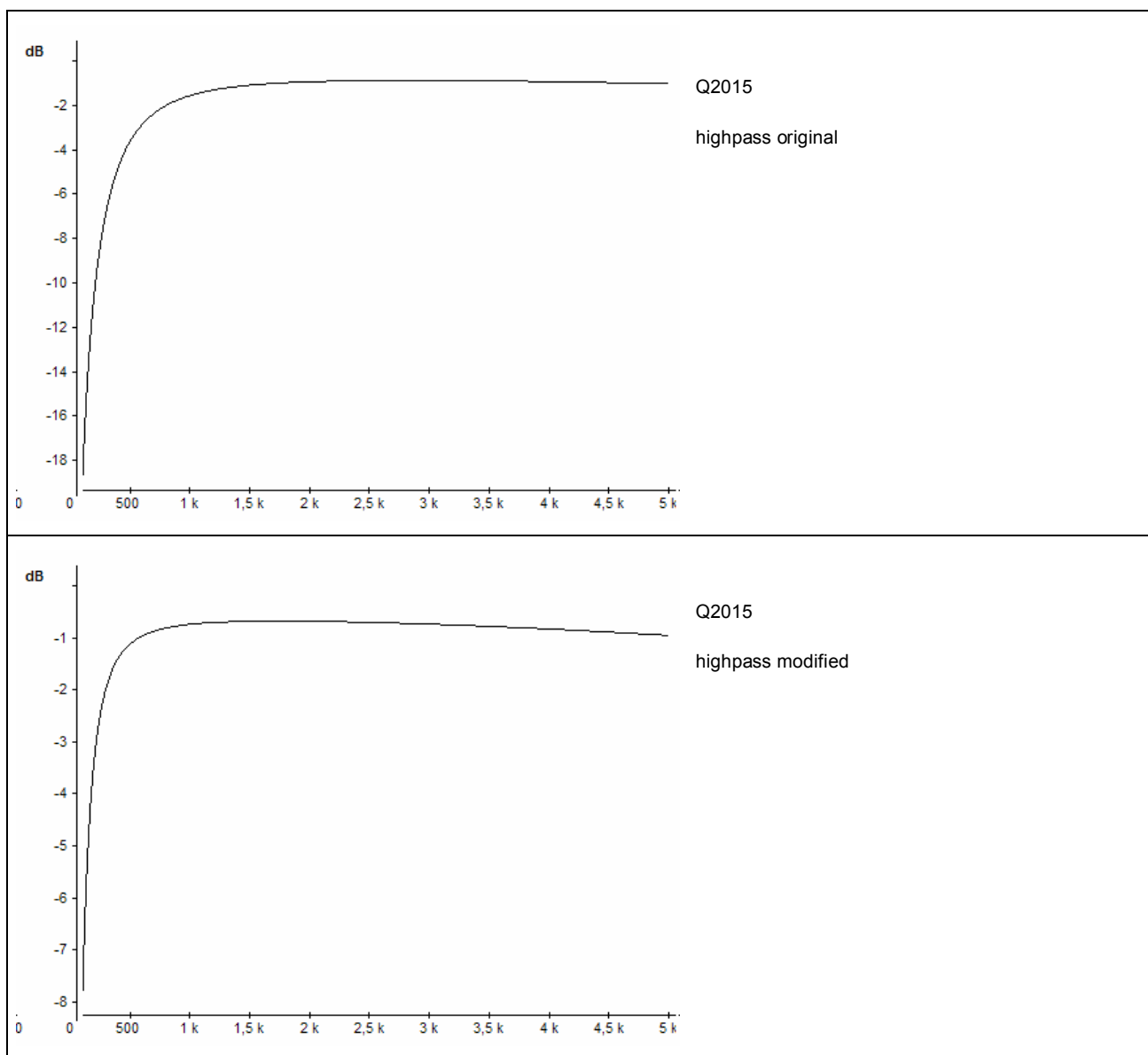
Jochen Heilemann (DG2IAQ)
German Amateur Radio Station

© 09.2003 Jochen Heilemann
All rights reserved

Yaesu FT-90R

Version 1.3

VHF-UHF Mobile Transceiver



Modification Sheet

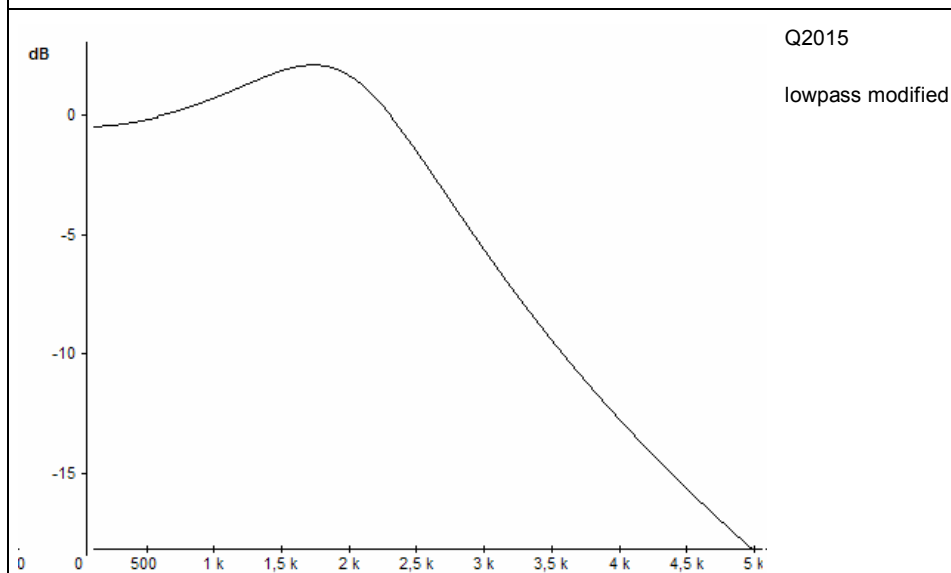
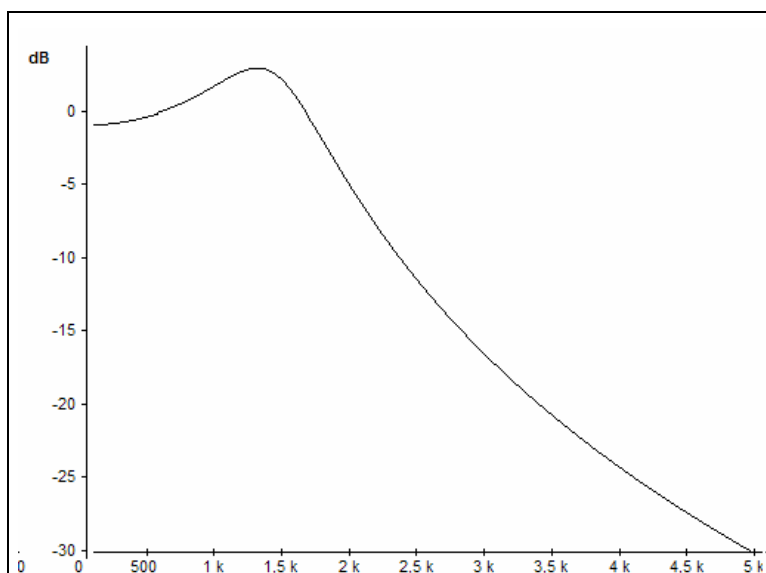
Jochen Heilemann (DG2IAQ)
German Amateur Radio Station

© 09.2003 Jochen Heilemann
All rights reserved

Yaesu FT-90R

Version 1.3

VHF-/UHF Mobile Transceiver



Modification Sheet

Jochen Heilemann (DG2IAQ)
German Amateur Radio Station

© 09.2003 Jochen Heilemann
All rights reserved

Yaesu FT-90R

Version 1.3

VHF-/UHF Mobile Transceiver

Alignment

See Service Manual

Modification Sheet

Jochen Heilemann (DG2IAQ)
German Amateur Radio Station

© 09.2003 Jochen Heilemann
All rights reserved

Yaesu FT-90R

Version 1.3

VHF-/UHF Mobile Transceiver

Document History

Version 1.0	17.08.2002	
Version 1.1	17.02.2003	C 2014 → 1,8 nF (better, warmer sound instead of 1,0 nF like shown before)
Version 1.2	07.04.2003	C2003 → 47µF parallel (more basses)
Version 1.3	26.07.2003	C2007 → remove (fast squelch response, a *must* for mobile usage) Changing of C2001/C2003 to get a great bass sound

Modification Sheet

Jochen Heilemann (DG2IAQ)
German Amateur Radio Station

© 09.2003 Jochen Heilemann
All rights reserved

Yaesu FT-90R

Version 1.3

VHF-/UHF Mobile Transceiver

Disclaimer • Disclaimer of liability

This modifications mostly need to be done by a electronic profi 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 passport-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

Jochen Heilemann

P.O. Box 1106

D - 75218 Niefern-Öschelbronn

Germany

e-Mail : DG2IAQ@WEB.DE

Fax : +49 (1212) 5-346-52-897

Callsign : DG2IAQ

DOK : A51 („Die Rasser“)

Locator : JN48JW Latitude 48.917(N) • Longitude 8.783(E)

Modification Sheet

Jochen Heilemann (DG2IAQ)
German Amateur Radio Station

© 09.2003 Jochen Heilemann
All rights reserved

Yaesu FT-90R

Version 1.3

VHF-/UHF Mobile Transceiver

Remarks