Modification Sheet	Jochen Heilemann (DG2IAQ) German Amateur Radio Station	

President Lincoln / Uniden HR2510

Version 1.0

10/11m 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.

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Overview

PLL Unit

• Solder bridge from kathode D312 to R389	Opens wideband from 26 – 30 MHz
• C302 (22µ) → 2,2µ	Faster S-Meter response
• C370 (10n) → 100n	More basses on FM transmit
• 220p from L307 to ground (= TP306)	PLL down to 24 MHz transmit Not necessary on working from 26 – 30 MHz

Main Unit (Transmitter)

• remove R120 (1k)	Higher mic.input sensitivity
• R96 (2,7M) → 100k	Louder roger-beep
• Q114 → 1k between emitter and ground	Louder AM modulation
• C61 (560p) → 120p	Opens af high cut from 604 Hz up to 2800 Hz
• C62 (0,47µ) → 0,47µ parallel	Opens af low cut from 3300 Hz down to 1700 Hz. Theoretically it could have a value of 4,7µ for a maximum low end of 300 Hz, but then the IC104 is overdriven and the gain must be reduced by reducing R85 from 470k to e.g. 100k. C61 then must have the original value of 560p for af high cut of 2800 Hz. On mine I changed C61 to 120p and let C62 by its original value of 0,47µ. It works fine with the original handmike (dynamic) and also with my Astatic 575M-6.
• C57 (68n) → 1µ	More gain and basses on SSB transmit
• C133 (22n) → 100n	More basses on FM transmit Opens af low cut from 720 Hz down to 160 Hz)
• C130 (47µ/16V) → 47µ/25V	The capacitor could be damaged by high transformed voltages. on TX.
• C116 (150p) → 150p glass capacitor (high voltage)	A must !!! C116 is burned out and damaged by driving on high output and with a little bad SWR, cause the 50V upper limit of the capacitor is exceeded. A normal effect on high tuned rigs with the maximum of 40 watts FM. Original the rig is aligned to 20 watts AM/FM. No problem with this output, the 40 watts SSB peaks aren't so critical and normally don't damage C116.
• C115 (180p) → 180p glass capacitor (high voltage)	…the same, but not so critical as C116
• C114 (180p) → 180p glass capacitor (high voltage)	…the same, but not so critical as C116
• C112 (100p) → 100p glass capacitor (high voltage)	…the same, but not so critical as C116
• Q132 (MRF477) → MRF455	On the newest rigs the MRF477 is replaced with a MRF455 and a little add-on PCB. This gives full linear (!!) 50 watts on SSB, but I reduced the output on AM/FM to also 20 watts on mine.
• R552 (150) → 220	More exactly SWR readout.

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• R69 (1k) → 3,9k	More exactly SWR readout. On original state the reflected readout is a little low and suppressed. You always think you have a good SWR but you haven't ! But you should better use a external SWR meter.

Main Unit (Receiver)

• C1 (39p) → on L123/C116	Usage of the whole TX lowpass filter also for receiving. Less interferences.
• D101 (MC301) → two serial BAT42 schottky diodes	Less noise floor, less attenuation of AGC for weak signals
• D102 (MC301) → BAT42 schottky diode	Less noise floor
• C7 (22µ) → 0,22µ	Faster response of AGC for digital modes, eg. packet
• D126/D127 (1N4148) → BAT42 schottky diode	Less noise floor
• Q101 (2SC1674) → 2SC2999	6dB gain with less noise floor
• D105 (1N4148) → BAT42 schottky diode	Less noise floor
• D106 (1N4148) → BAT42 schottky diode	Less noise floor
• D120 (1N4148) → BAT42 schottky diode	Less noise floor
• Q104 (2SC1674) → 2SC2999	6dB gain with less noise floor
• Remove C157 (100p)	About 6dB more RX gain on AM/SSB
• Remove capacitor of L105 (lower PCB side)	This gives 6dB more RX gain. You have to re-align L105 for maximum signal level.
• D111/D112 (1N60) → AA118	Less noise floor
• D113 (1N4148) → BAT42 schottky diode	Less noise floor (ANL)
• D114 (1N4148) → BAT42 schottky diode	Less noise floor
• C31 (1n) → 10n	More basses on AM/SSB demodulator
• Solder R1 (5,6k) from upper end L104 to middle Pin L115	On some rigs the FM demodulator input via R1 is directly connected with the upper Pin of L104. And R1 was 10k on mine. On the original circuit diagram R1 is connected to the middle Pin of L115 and has a value of 5,6k. This gives more selectivity and less distortion for FM demodulator input. You can better hear weaker FM signals.
• C412 (47n) → 10n	Opens FM deemphasis from 330 Hz up to 1.600 Hz ! Much brighter, clearer and louder FM reception, especially of weak signals.
• Solder 6,8n to ground after R68 (10k)	Af high cut down on 2.300 Hz for all modes. Against noise floor. Check, if R68 has the value of 10k ! I found some other values depending on the production date of the rig. Then change R68 to 10k too.
• 10k on both ends of RIT	This gives a smaller span of RIT. The original RIT span is too wide and the RIT has to align very accurate. For normal SSB signals the RIT was only changed from 11 to 1 o'clock at max. on mine. With this mod the RIT get's a smaller span and can be aligned without any problems. After this mod you have to re-align VR111 ! (Procedure described later).

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General	

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Transmitter	

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Receiver	

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Alignment

RV xx

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Document History

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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.

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

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Remarks