G4DHF 144MHZ

WORKING DX ON V/UHF

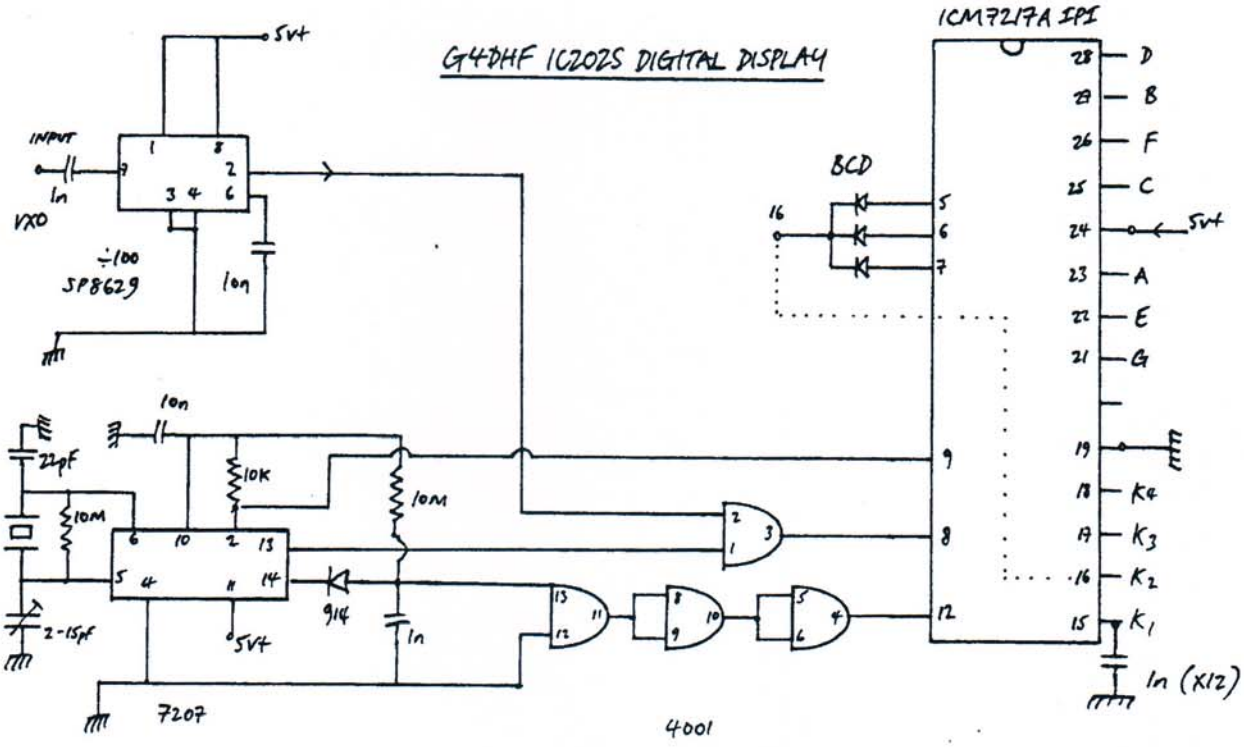
IC-202 HAND PORTABLE SSB/CW 144MHZ TRANSCEIVER

The IC-202 first appeared in the mid 1970's and was extremely popular. It's single conversion design was simple in the days when commercial digital technologies were in their infancy, making it highly suitable for driving high power linear amplifiers and as an I.F. for microwave systems. Using a VXO operating at around 133MHz into a 10.7MHz I.F. this little radio produced a spectrally clean signal with low phase noise. The IC-202 was superseded the IC-202e, which was itself replaced by the IC-202S possessing a number of refinements, including the addition of LSB and sidetone. I had several IC-202's, including at least two IC-202S' and the companion IC-402 for 70cms, which were my constant companions for over 25 years and accompanied me on all my DX-peditions throughout the '80's and '90's. In May 1988, with the assistance of G4CYA and G8PNX I published a number of modifications to the IC-202 in the UK magazine, "Ham Radio Today". This publication is no longer available and so I'm providing a copy of the article here (http://www.g4dhf.com/IC202 Modifications/IC-202 Modifications G4DHF.doc).

DIGITAL DISPLAY

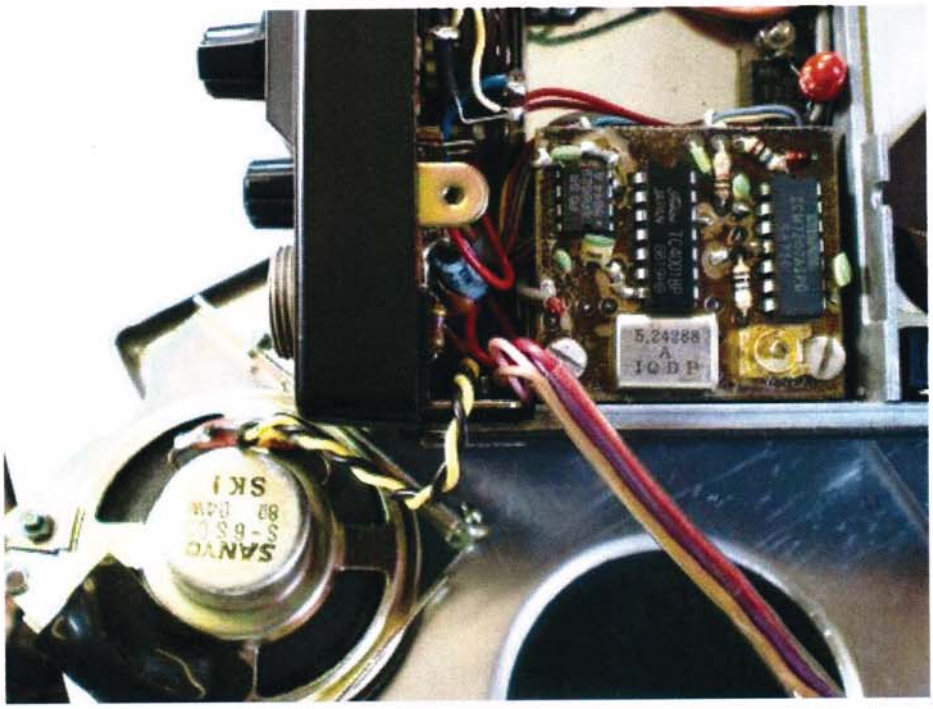
Perhaps the most limiting factor in the design was the lack of a digital readout, which is particularly important at V/UHF. The radio was originally designed to be hand portable and so the internal linear dial was considered adequate. There was, however, a problem in that the accuracy of the dial was affected by changes in the VXO frequency caused by seasonal temperature variations. Given that my radio was also in use as my base station this problem became more of an issue. I designed the digital display in the late '80's and several copies were made. The top left bezel on the fascia containing the red led was removed, making way for a small pcb containing the four digit miniature LED display. These were popular in the first digital watches but are now hard to source as the ubiquitious LCD types have superseded them in more modern equipment. I am continually surprised by the number of enquiries for details of the display, even after this long period of time and so I'm publishing what information I can find. Prospective builders will need to have ingenuity in sourcing components and in creating the miniature pcb's, which locate under the internal speaker.

CIRCUIT



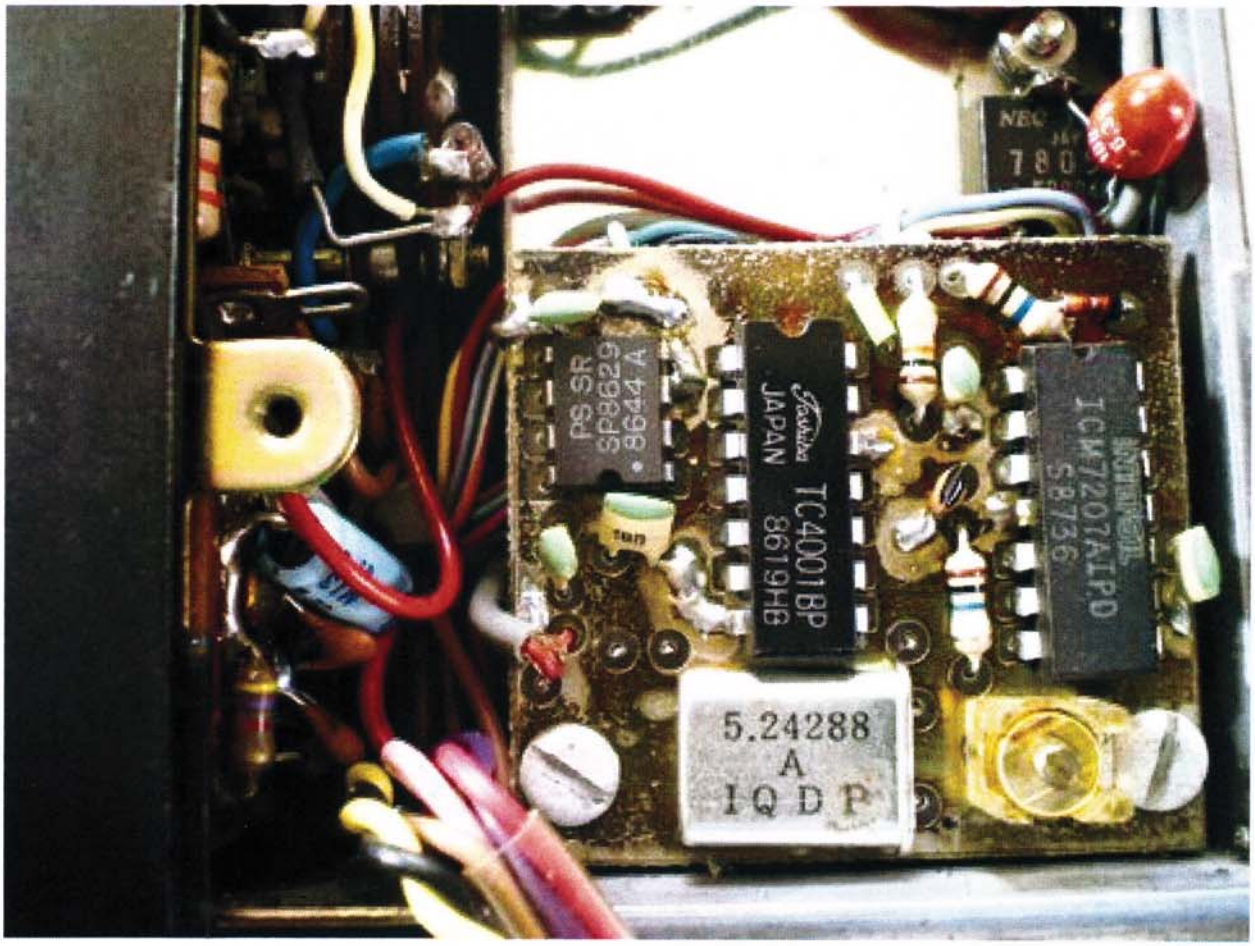
The counter is based on the ICM7217A, which has a common Cathode multiplexed driver. As the device is only useful to around 5MHz the input from the IC-202 VXO is divided by 100 by the SP8629. The input to the counter is made via a small value capacitor in the range of 0.7pF ~ 2pF on the VXO output pcb. The BCD input is controlled by diodes to "add" the 10.7MHz I.F. offset to the VXO frequency to display 144MHz. Clocking is provided by the 7207 and a 5.24MHz xtal. A more detailed description of the circuit can be found in the Counter's Application notes.

CONSTRUCTION

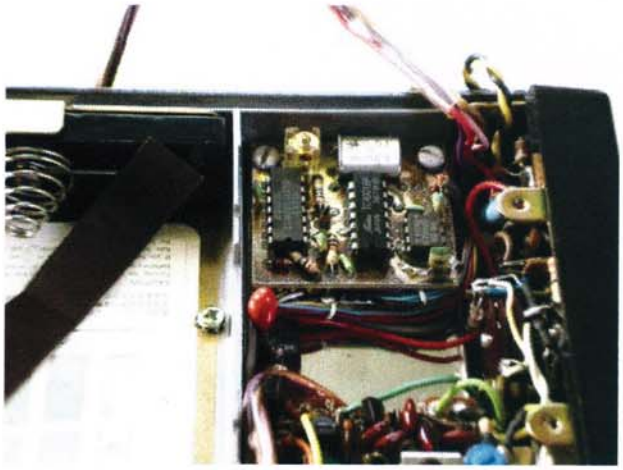


Space is limited inside the IC-202 and so the counter is built on two pcb's, which are "piggy backed" above each other and mounted under the loudspeaker housing via the two holes that secure the internal tin plate screen.

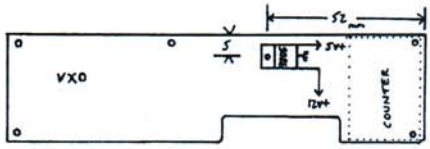
When the speaker is removed the original 1000uF capacitor mounted below should be removed and relocated to the 12V supply rail on main wiring block on the upper pcb. A 5v voltage regulator and 100uF capacitor are mounted on the tin plate before reassembly, which provides the supply for the counter.



COUNTER PCB'S MOUNTED UNDER THE INTERNAL SPEAKER AND THE DISPLAY PCB

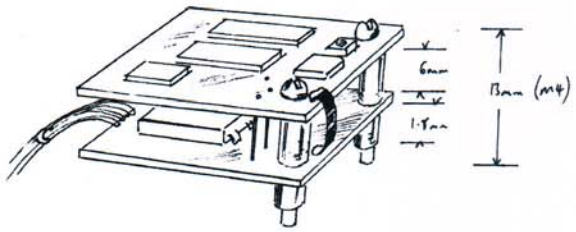


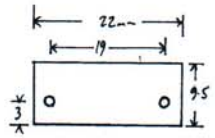
ADDITIONAL NOTES AND DRAWINGS



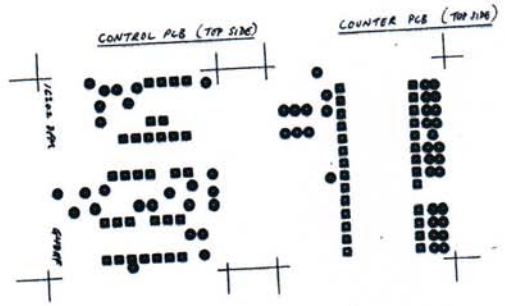
INTERNAL TIN PLATE SCREEN

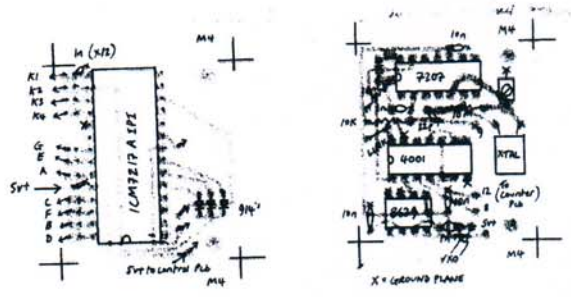
*NOTE : X2 22µF TANT CAPS ON INPUT AND OUTPUT OF 7805



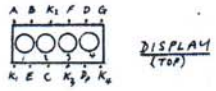


DISPLAY PCB





COUNTER PCB CONTROL BOARD PCB



DISPLAY (TOP)