

LADDER CRYSTAL FILTERS FOR RADIO AMATEURS

INTRODUCTION by Jack Hardcastle G3JIR

In the following pages you will find a detailed guide to the design of ladder crystal filters. If this is too mathematical for you do not worry. It is only included for those of you who really, really, really wish to know about such things. For everybody else all you need to do is to read the help file. Even this will be seen to be necessary only as a last resort. Just jump to the software and enjoy putting in some numbers, and read the help file later.

The comprehensive ladder crystal filter design program has been prepared by Horst Steder DJ6EV. Taking my BASIC routines which were published in Radcom in May 1983 as a starting point, he has made a number of important additions which have greatly increased the program's facilities and ease of use. These additions routines for tuning individual crystals, and also the graphics which have been assembled by Delphi into the finished product. Incidentally, the reason these BASIC routines were so fragmentary is because the PET and the Apple2 computers in use in 1983 had very limited memory available. In fact, the memory available for programs was a mere 4k, or so, something which is laughably small by today's standards.

Our shared interest in these filters goes back as far as 2001 and after several hundred QSO's on 40 metres over this period we decided we had enough material to make it worthwhile trying to pass it on to others, in an easily usable form. I cannot put a date on the decision to publish, but it was at least two years prior to it's publication date in the November/December issue of QEX. The development of this work has been carried out using amateur radio as the principal means of communication; but we have also made much use of the Internet, and innumerable e-mail's have passed between us. For instance, the final draft of the text which was submitted to QEX was number 9d: we gave-up allocating numbers after 9. This would have extended even further into the alphabet if we had not used our regular 40 metre 'skeds' to discuss some of the trickier points of design. It would be nice to be able to say that it was all finally 'wrapped up' using only these means of communication, but we have to admit to needing to make some last minute telephone calls so as to get decisions back to ARRL without further delay.

So, what are we going to do next. The brief answer to this is that we have not yet decided. We continuously discuss things which have the potential to become a future publication. However, even radio amateurs who are retired only have a finite amount of spare time to devote to such projects. Don't forget, we also like chasing DX, working contests and having local ragchews on 2 metres. And on top of all that there is that much neglected list of chores our xyl's line-up for us. So please take this into account if you need to contact us. We will try to provide informative answers to any questions which we have not covered in the Help file. This will be updated at intervals.

Acknowledgements

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