Dr. William J. Schmidt

From: AmateurRadioBuilders@groups.io on behalf of John Bennett via groups.io <jkb=colorado.edu@groups.io>
Sent: Tuesday, April 1, 2025 12:16 PM
To: AmateurRadioBuilders@groups.io
Subject: [AmateurRadioBuilders] More BPF Results

I just uploaded the results of a T41 BPF redesign, the salient features of which are as follows:
1) All filters were re-simulated in ELSIE using AI6YM kit capacitor values (which differ slightly from K9HZ values as shown in the attached file).
2) ARRL and *Toroid.Info* toroid material recommended frequency ranges and tolerances were taken into consideration.
3) No Type 0 (phenolic) material toroids were used. At least for me, these produce inductance values all over the place.
4) Air coils were used for all very small values of inductance.
5) All toroids were wound with 28 gauge wire. Heavier gauge (22 or 24) was used for air core inductors.
6) Inductor values were checked with LCR meter and "pre-tuned" prior to insertion. In some cases a turn had to be added or removed from the calculated number in order to obtain a better value.
7) The filter as a whole was then tuned until loss was less than at least 3 dBm for entire range.
8) Filter performance was measured with calibrated and normalized DSA832-TG spectrum analyzer, then saved.
9) Filter ELSIE simulated vs. measured performance was displayed using custom Python program.
10) Design details and resulting performance are in the posted file. I expect that even better performance is possible with more fussing.
Design files available upon request.

73,
John Bennett
AE0AM

https://groups.io/g/AmateurRadioBuilders/files/AE0AM_T41_BPF_Filter_Design_Notes.pdf

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