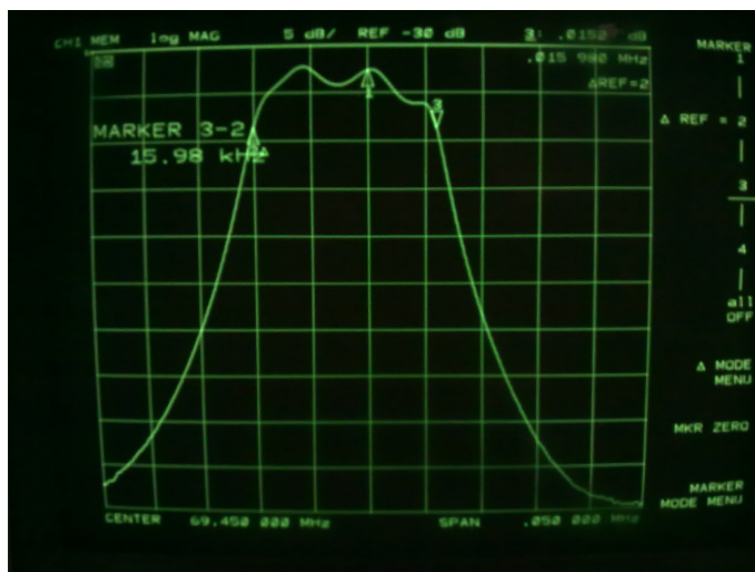


Measurements of the roofing filters of a FT-950

All measurements are taken between TP 1066 and J 1028 (Scope (H)) on the main pcb of the FT-950. The scope output is terminated with 50 ohms. The signal to the TP is applied via a high impedance probe. This results in a much higher measured insertion loss than it is in reality and in a reduced dynamic range of the NWA.

a) Originally equipped filters

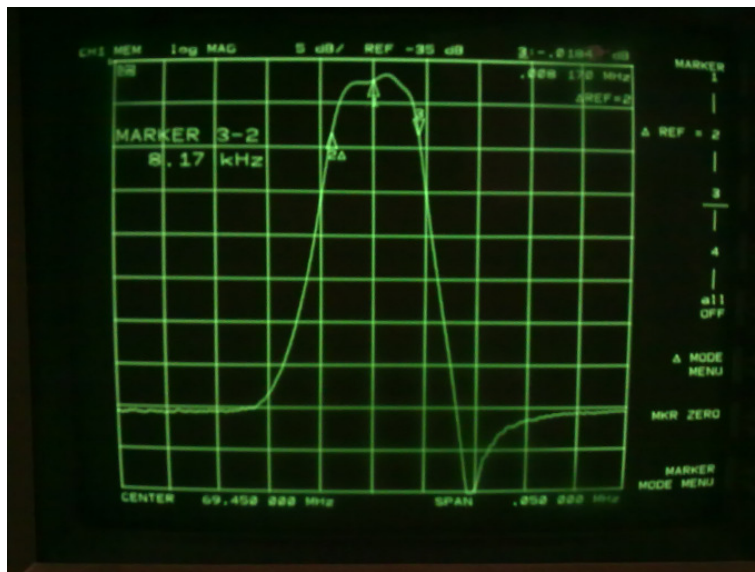
15 kHz filter



centre freq: 69.450 MHz horiz: span 5 kHz/div
reference value: -30dB vert: 5 dB/div

=> Bandwidth @ -6dB points: 15.98 kHz

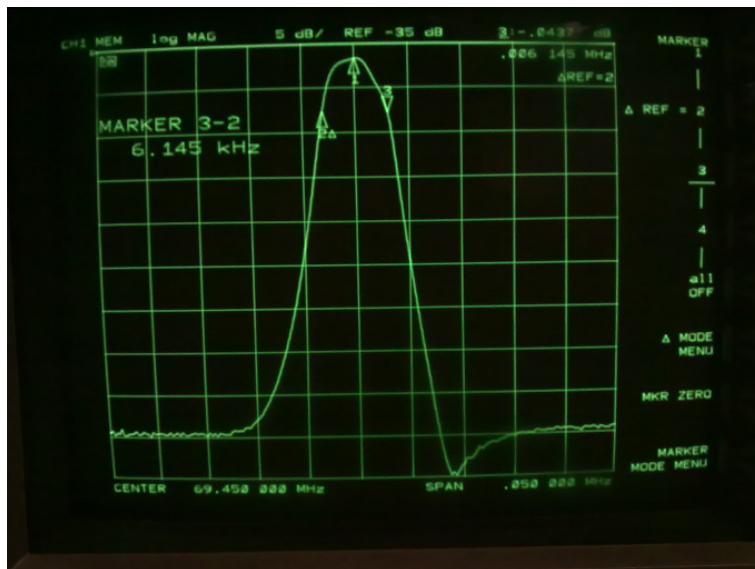
6 kHz filter



centre freq: 69.450 MHz horiz: span 5 kHz/div
reference value: -35dB vert: 5 dB/div

=> Bandwidth @ -6dB points: 8.17 kHz

3 kHz filter



centre freq: 69.450 MHz horiz: span 5 kHz/div
reference value: -35dB vert: 5 dB/div

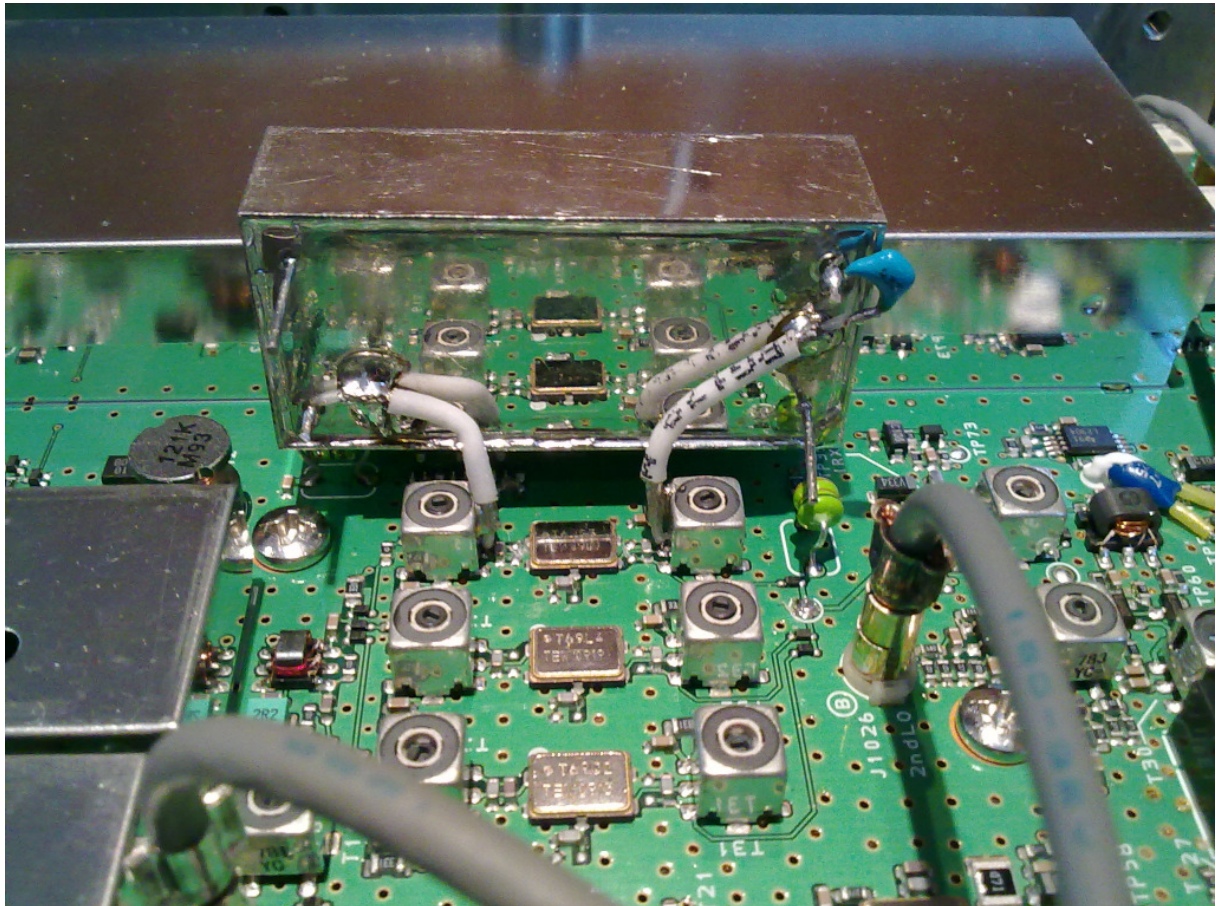
=> Bandwidth @ -6dB points: 6.145 kHz

Note:

- The insertion losses of the 6 kHz and 3 kHz filters are about 5 dB higher than the loss of the 15 kHz filter.

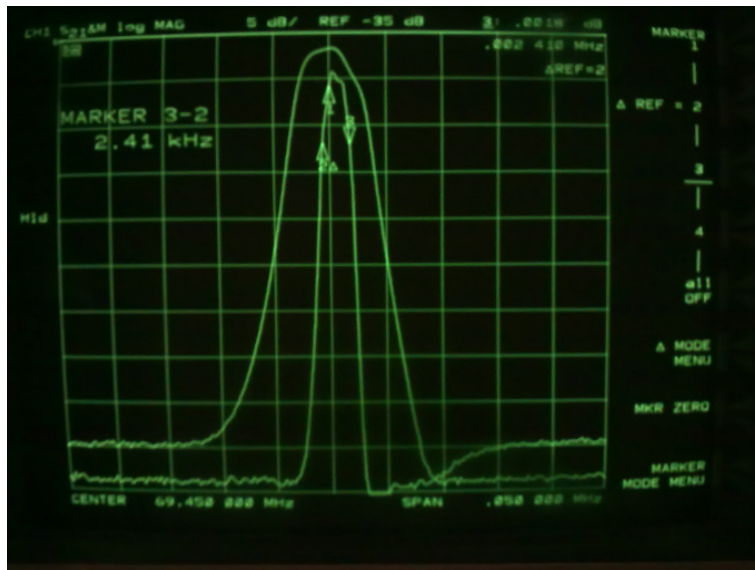
b) Replacing the original 3 kHz roofing filter with the NS 3 kHz filter (“AC0C filter”)

The filter was replaced more or less according to the instructions from Jeffs home page (www.ac0c.com).



The picture shows the modified section of the main pcb of the FT-950.

c) Comparison between the original 3 kHz filter and the NS filter



centre freq: 69.450 MHz horiz: span 5 kHz/div
reference value: -35dB vert: 5 dB/div

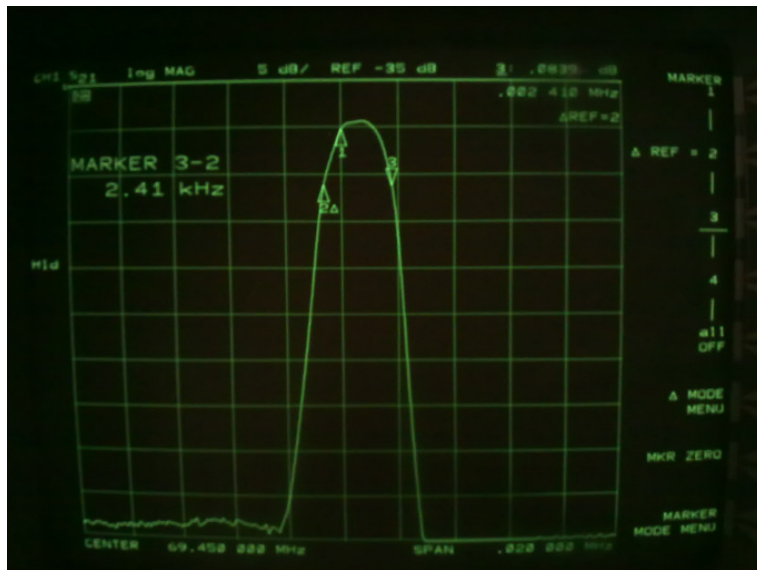
Results:

Original 3 kHz filter: => Bandwidth @ -6dB points: 6.145 kHz

NS 3 kHz filter: => Bandwidth @ -6dB points: 2.410 kHz

The measurements were taken with the same settings of the transformers T1026 and T1033.

d) The 3 kHz NS filter in the FT-950



centre freq: 69.450 MHz horiz: span 2 kHz/div
reference value: -35dB vert: 5 dB/div

=> Bandwidth @ -6dB points: 2.410 kHz

The measurement was taken after a slight tuning of the transformers T1026 and T1033.

Notes:

- The optimized insertion loss of the NS filter is about 2 dB higher than the loss of the originally equipped 3 kHz roofing filter.
- From the measurement one could assume that the filter is out of centre. But checking the frequency of the NWA HP8753A in use with a counter equipped with a GSP locked reference source revealed that the centre frequency was 440 Hz too low. Applying this correction to the measurement shows that the filter is nicely centred.

A special thank goes to Jeff AC0C who made available to the ham world a great 3 kHz roofing filter for the FT-950 and FT-2000. Thanks again.

73 de HB9ERU Bruno

PS. The first SSB QSO using the NS 3 kHz filter was a new one (9500 km). Mere chance or not?