Modifications To The KAF2 Frequency Response

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The KAF2 filter adds a nice audio filtering capability to the K2 transceiver. However, I found that the ringing that occurred in its narrowest mode (AF2) was objectionable to my ear. This was especially true when static crashes caused the filter to ring at its center frequency. Based on some crude measurements I made on the filter, it appeared that it had a ringing time of nearly 20 milliseconds.

Based on my objections, I developed a series of alternative filter responses for AF2 (the AF1 response is unchanged). These are shown in the table below. I modified my KAF2 filter to the values shown in the Low Ringing option and am much more pleased with the result. After doing this, I decided that the AF1 setting was not necessary and used the jumper to disable it. These values are presented here in case anyone else is interested in tuning their KAF2 for their personal preferences. The 0.022 uF film capacitors are available from Radio Shack and fit just fine on the KAF2 board.

The bandwidth and ringing time numbers are based on a theoretical calculation of the filter response. The ringing time is the time that it takes the filter ringing to decrease 20 dB from its peak output when driven by an impulse. As can be seen from the table, narrow bandwidth and a low ringing time cannot both be achieved at the same time.

Description	6 dB BW	20 dB BW	Ringing Time (ms)	R6	R7	R8	C7, C8 (uF)
AF1	258	1490	5				
Very Narrow	79	262	20	220K	220	1200K	0.01
As Designed	99	312	16	180K	470	510K	0.01
Intermediate	136	408	12	100K	1.2K	270K	0.01
Low Ringing	162	488	10	33K	470	82K	0.022
Very Low Ringing	189	583	8	22K	1.2K	56K	0.022