



K3 Technical Alert

Nov 17, 2009

Spurious TX sidebands due to C3 installation on early Rev C KPA3 PC boards.

We have determined that a small number of K3/100s and KPA3s left the factory earlier this year with capacitor C3 installed by mistake on early Revision C KPA3 PC boards. This part location should be empty on Rev. C KPA3s. Installation of C3 causes the PA bias supply to oscillate on some KPA3s at approximately 15-20 kHz, resulting in spurious TX sidebands at that spacing from the carrier.

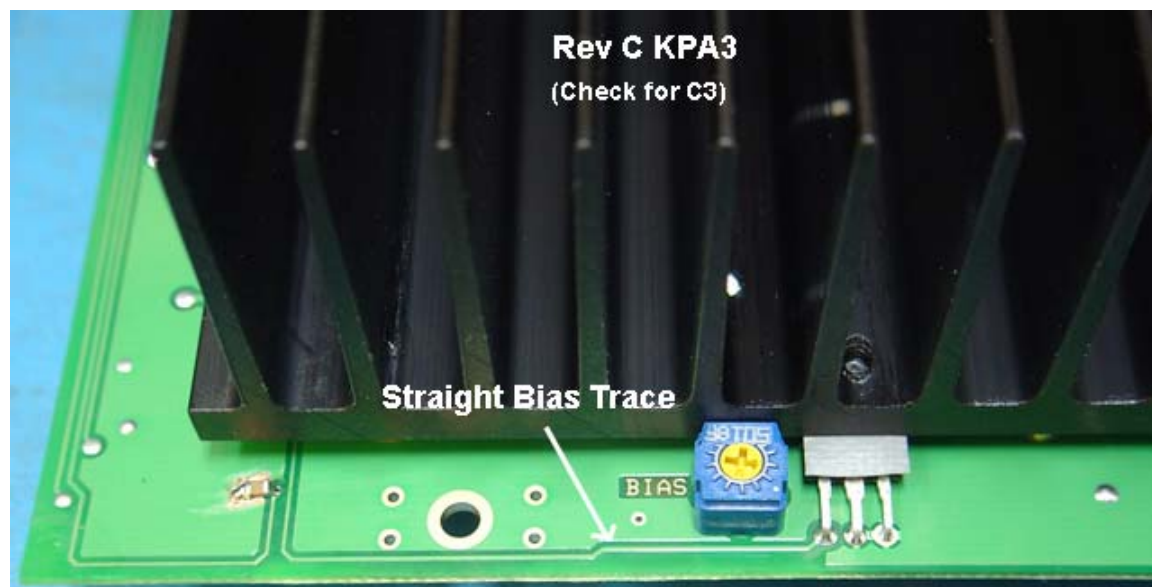
S/N & Date Range: A small number of K3/100s within approximately S/N 3000-3138. These radios were shipped approximately April 30 to June 2, 2009. Upgrade or repair KPA3s sent separately during this time period may also be affected.

After June 2, 2009, this problem was corrected for all K3/100s s/n 3139 and later, and all Rev C KPA3s bought as an upgrade. This alert does not apply to Rev C KPA3s shipped after June 2, 2009.

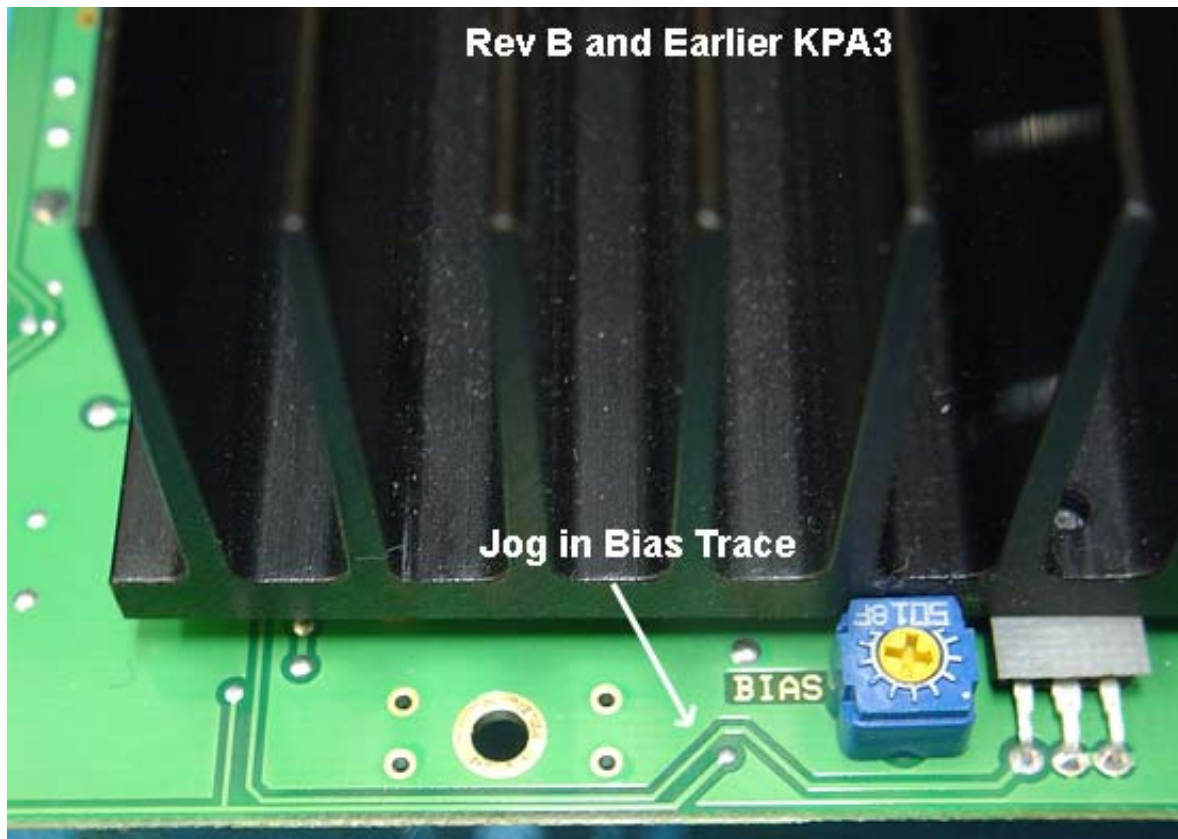
Symptom: A strong TX spur, approximately -20 dB down from peak transmit power, spaced approximately 15-20 kHz on each side of the operating frequency.

Corrective Action: Remove capacitor C3 from the Rev C KPA3 PCB as described below.

How to confirm if you are in this group: If your K3 is in the serial number and ship date range noted above, you may have a Rev C KPA3 PC board with capacitor C3 installed. To determine if you have a Rev C KPA3, you can examine the top side of the KPA3 (same side as its heat sink). Remove the K3 top cover and look at the KPA3 as installed. A portion of the KPA3 PC board is visible at the front edge of the heatsink as viewed from the front side of the K3 (see below). This is also visible through the top K3 cooling vents.



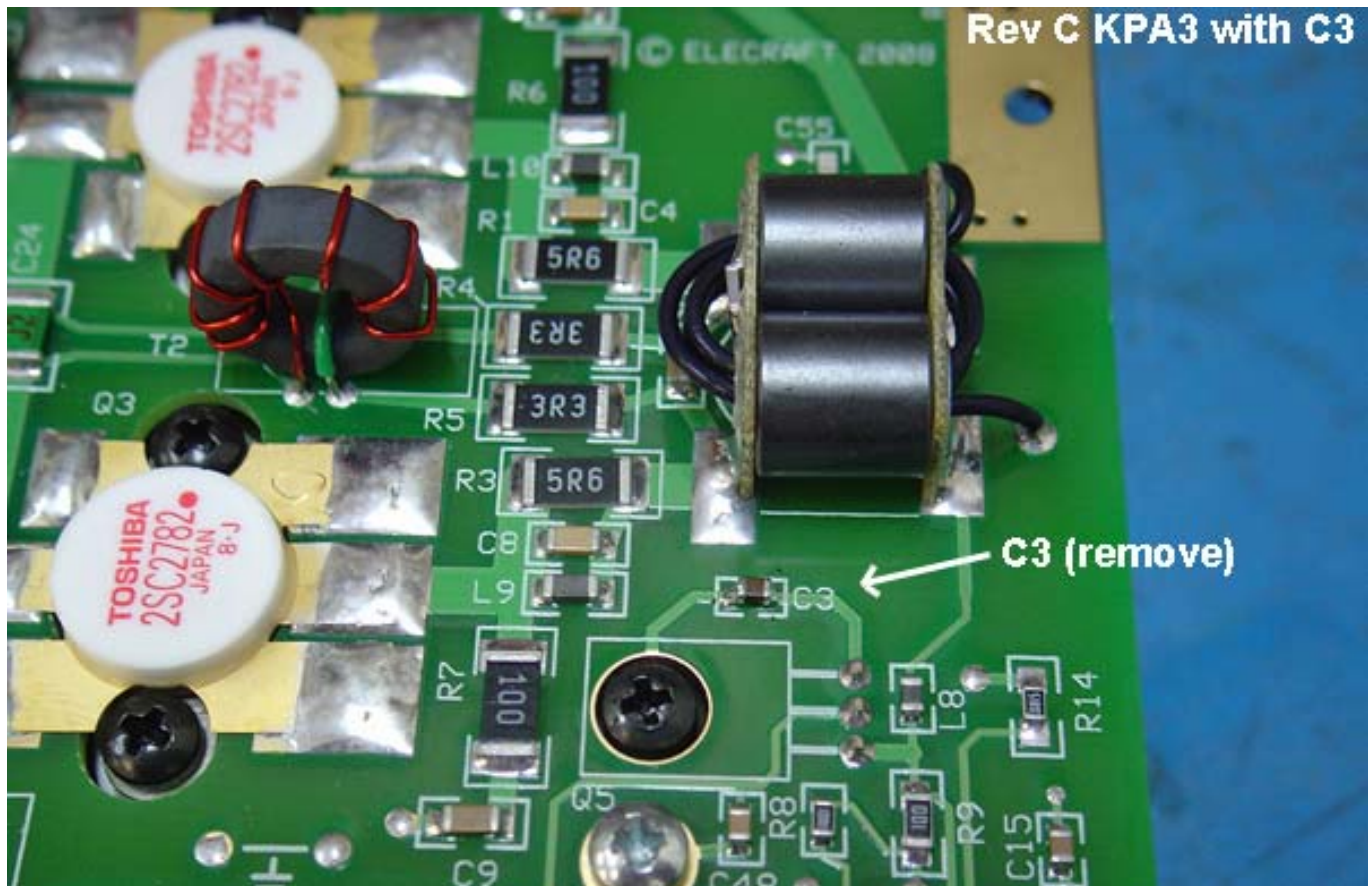
This is a Rev C KPA3. If your s/n or purchase date range is as noted above, check for installation of C3.



This is an earlier Rev KPA3 and does not need to be checked for C3.

To determine if you have C3 installed on a Rev C KPA3, inspect the reverse side of the KPA3 PCB (see pictures on next page).

To remove the KPA3 from your K3, first remove the 12V power cable before removing the wires to the circuit breaker and the KPA3. Then, take out the 3 screws and lock washers, and grip the KPA3 heat sink firmly, applying upward force near the back of the KPA3, and gently rock it side to side until it comes free of the connectors that are on the back of the board.



If C3 is present as shown on the above picture, remove it using a soldering iron. A 1/8" tip iron should be able to easily heat both ends of the capacitor, easily removing it from the board.

On Air Test:

You can also test for this problem by transmitting with your K3 in TUNE mode at 100W into a dummy load while listening to your signal with a second independent receiver. Leave the antenna disconnected on this second receiver.

Using the attenuator on the second receiver, reduce the K3's carrier to below maximum on the S Meter. (Preferably to the S9 +20 range.) Listen between 10 kHz and 20 kHz above and below the carrier for strong transmit spurs that are only 20 dB down from the carrier (approximately S7 – S9 minimum if the carrier is S9+20). Also, if turning the K3's power down below 13 W (bypassing the KPA3) eliminates the strong spurs, that also confirms this problem is C3 on the Rev C KPA3.

Note that there may be much weaker signals heard off of the carrier frequency due to strong signal spurious responses by the second independent receiver or due to the very weak image of the K3's 15 kHz DSP IF. These are not a problem.

After removing C3, you can repeat this test and the strong transmit spurs will be removed.

If you have questions regarding this alert, or how to remove and re-install the KPA3, please email us at k3support@elecraft.com , or call our support department at 831-763-4211. Also, if you are unable to make this modification yourself, Elecraft will perform the change under warranty for you.