SR400 LOW POWER IN CW AND TUNE

Tune the rig up on 3.90MHz, LSB mode, MOX, key the mic and slowly repeat the words "three four three four three four". If the power out is substantially higher than it was in the tune function a fault most likely lies somewhere in the 1650 IF system, could be alignment or component drift.

BACKGROUND:

The rig was designed as an SSB rig primarily. CW stretches the limits of the 1650 KHz filter. The CW and TUNE functions use the USB carrier xtal regardless of what band you are on. The passband of FL1 is from 1650.35KHz to 1652.45KHz. In TUNE mode the balanced modulator CR19 & CR20 is biased to a full off-balance mode letting the 1652.8 KHz from the USB carrier osc pass through. This 1652.8 KHz is ideally 12 to 15dB down the skirt of the filter passband. However, this unbalanced pass signal is 5 to 8db stronger than the normal balanced mixer signal and this normally is enough to saturate the TX mixer. With ageing of the filter and associated circuitry it sometimes drops to 18 to 25 dB down and the tune and cw functions suffer power loss.

Before any corrective action is take one important test needs to be completed. Complete the adjustment of the VFO off-set. See paragraph 8-14 VFO CORRECTOR, in the factory INSTALLATION AND OPERATING INSTRUCTIONS manual. Then recheck the power in LSB and TUNE.

QUICK FIX:::: Adjust the USB Xtal (trimmer C139) to get 1652.600KHz instead of 1652.8kHz. That will move the carrier back up into the bandpass of the filter. LSB voice will not be affected. CW and USB voice will be shifted 200 HZ which can be easily off set with the cal function. I have offset the USB osc as much as 500Hz and still gotten in-spec performance. Recheck the power out in the Tune function. You can continue to operate in this condition. However, caution this is a cover-up. There is a fault and it will most likely continue to degrade.