Most Common Service Questions for the Icom IC-R9000

Symptom:	Dead radio. No lights, no sound, no display.
Probable Cause:	No 13.8 output from P.S.
Check:	Make sure the external DC jumper is installed on the rear panel. If it is, remove and hook up 13.8v from external supply. If unit powers up with external power, check regulator unit for faulty or open F1. If unit remains dead, and 13.8v line is not open, check for faulty IC9 timer on Logic A unit.
Remarks:	Unit draws approximately 3A at 13.8vdc.

Symptom:	Logic problem--erratic frequency change, front panel push buttons locked-up, logic check shows address fault. CPU reset does not help.
Probable Cause:	CPU address problem.
Cure:	Install W1 jumper into J7 on SW-D unit. (located on left side PCB beneath access door in top cover). Then reset CPU. (push and hold [CLEAR] and turn unit on.)

Symptom:	Intermittent CRT display. Various problems. Receiver operation is normal.
Probable Cause:	Cracked solder on CRT unit PCB.
Cure:	Resolder every joint in sight on CRT unit PCB.

Symptom:	Intermittent excessive CRT brightness. Vibration sensitive. Receiver operation is normal.
Probable Cause:	Intermittent negative brightness control voltage.
Cure:	Resolder cracked joints on VR-C unit. If still bad, resolder CRT unit PCB.

Symptom:	Intermittent whine or hash noise in FM from 30-499 MHz and 1000-1499 MHz when warm. Noise is most often heard in FM broadcast band.
Probable Cause:	Temperature sensitive 768 Hz VCO on PLL B unit.

Cure:	Replace faulty IC15 on PLL B unit.

Symptom:	Receive problems from 500-999 MHz, and 1000-1499 MHz.
Check:	268 MHz VCO section on PLL B unit.

Symptom:	No RX at all above 30 MHz, all modes. Green LED is off.
Probable Cause:	PLL unlock.
What to do:	Check LPL injection to HPL (starting at Q15) on PLL B unit and trace to fault from there. Note that the reference oscillator, DDS, LPL sections are probably okay since HF is working. If the PLL section has recently been serviced, check for loose coaxial connectors.

Symptom:	Low RX from 30-1000 MHz and/or 1-2 GHz.
Probable Cause:	Spread out center conductor at N-connector on rear panel. Caused by forcing on a PL-259 connector.
Cure:	Straighten center conductor or replace connector. Warn customer.

Symptom:	No RX, all bands, all modes. Green RX light not on, radio very quiet. Display and front panel operation are normal.
Probable Cause:	PLL unlocked.
Check:	Power supply voltages to PLL unit. If okay, check reference oscillator output on PLL B unit. If ref. is okay, start at DDS unit and work your way out to HPL.

Symptom:	No HF RX at all. Not PLL unlock. VHF and UHF operation normal.
Common Cause:	Hi-Z antenna switch on rear panel is in the wrong position.
Less Common Causes:	No HF 2nd L.O. output. Check area of Q12 and 13 on PLL B unit for 38.XX MHz. 2) Open diode on RF A unit. 3) No band switching of supply voltages to IC1 and 2 on RF A unit. 4) Disconnect coax to or from RF A unit.

Symptom:	Blank screen when receiving TV signals in display mode.
Probable Cause:	Video in/out jumper is missing from rear panel.
Remarks:	Sometimes it is necessary to turn up CRT brightness for adequate picture when receiving TV signals.

Symptom:	Squelch erratic. AF gain control and squelch control interact. RX may be low. S-meter may not zero in absence of signal.
Probable Cause:	Low or negative supply from reg. unit.
Check:	Verify proper voltages at J8 on reg. unit. Pay specific attention to levels of -12 and -7 on pins 4 and 5, respectively.

Cure:	If voltages absent or low, electrolytic capacitors in DC-DC converter section are probably old. Replace all electrolytic capacitors in DC-DC converter (shielded) section.

Symptom:	Center frequency displayed on spectrum scope jumps far away from center when changing display resolution.
Probable Cause:	Scope unit is out of alignment.
Cure:	Perform *Center Frequency, Horizontal Scale,* and *AFC Center* alignments on age 5-14 of service manual. Sweep oscillator may be also require adjustment.
Remarks:	Make sure that AFC switch on scope unit is in correct position.

Symptom:	Voice operated squelch operation is unreliable. Unit sometimes passes up signals when scanning.
Probable Cause:	Discriminator misalignment.
Cure:	Perform center meter alignment on page 5-10 of service manual. Voltages are critical and must match listed values very closely.

Symptom:	Marginal, low, or no RX in specific sections, HF, VHF or UHF bands.
Probable Cause:	RF overload has damaged front-end.
Check sensitivity in these sections::	30-89 MHz, (go to Q1 section on RF B unit if bad) 90-249 MHz, (go to Q2 ") 250-499 MHz, (go to Q3 ") 500-999 MHz, (go to Q4 ") HF only: go to bandpass filters on RF A unit.
Cure:	Replace defective components in faulty sections. May require realignment of varactor diodes.
Remarks:	If low or marginal V/UHF RX is experienced at edges if one of these sections only, an alignment of that section may be all that is needed (see page 5-8 of service manual). Before attempting alignment, be sure that negative voltages from the regulator unit are correct, especially in older units with many hours of use on them.

Symptom:	Marginal or low RX on all bands of VHF and UHF spectrum with especially poor RX at the edges of some bands listed above.
Probable Cause:	Low or noisy reg. unit voltages are detuning front-end varactors diodes.
Cure:	Check output voltages from reg. unit for proper value and for noise. If okay, check for faulty D1 and D21 on RF B unit. If bad, replace faulty electrolytic caps in reg. unit. Realignment of RF B unit should not be necessary.

Additional Information

Scope vs. meter tracking: approximate values.

14.1 MHz, preamp off, 25 kHz scope resolution.

RF input at antenna:	**S-meter:**	**Scope:**
1uV	no deflection	1st division
5uV	S-2	2nd
20uV	S-7	3rd
50uV	S-9	4th
200uV	S-9+12db	5th
500uV	S-9+20db	5.8th
1mV	S-9+27db	top of scale

* Preamp ON brings scope level up one division.

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