

[AMPS] 87A Fault 17; cause & cure

from [[Richard W. Ehrhorn](#)]

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To: <amps@contesting.com>

Subject: [AMPS] 87A Fault 17; cause & cure

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Date: Sun, 11 Apr 1999 23:18:41 -0600

Hi Dick & all...

Dick, I believe your timing explanation as to why you see Fault 17 (low gain) rather than Fault 13 (overdrive) is precisely correct. I remember discussing the exact same issue with the guy(s) who knew the 87A code best probably 7 or 8 years ago.

Your discussion of transceiver spikes is right on, as well. I've encountered large initial rf output spikes on the IC-781, TS-940, -950SD & -950SDX, and FT-1000D. ETO/ALPHA lab techs used to reset a TS-940's internal ALC to get more output for various tests, and discovered that they could put out brief initial spikes up to 400W!

With the TS-950SD & FT-1000D, the cause is usually, in my experience, a cockpit problem resulting from (a) not reading and following the transceiver manual OR (b) the manual's giving inadequate or no instructions as to how to set the xcvr DRIVE control (the Yaesu label; I think the equivalent front panel knob on the TS-950s is called something different, but don't have one here to look at). In any case, it determines the amount of xcvr INTERNAL ALC feedback required to deliver desired Pout from the transceiver.

The xcvs have ALC meter functions and it's easy to set DRIVE during actual operation with the xcvr delivering the desired Pout. Just switch the meter to ALC and, either key-down or while talking normally on SSB, adjust DRIVE so ALC peaks are around the middle of the normal range marked on the meter scale. This is probably in the area of 6 dB. If the transceiver drive control is set too high relative to actual operating Pout, a big initial spike does in fact get through to the output. This is because of the finite time (on the order of a millisecond or two, typically) that it takes the xcvr ALC to respond and bring Po down to the preset level.

We've found that many guys tend to crank up the exciter drive control by the seat of their pants and then set its Po with the RF OUTPUT control - never, or at least never again, checking the ALC. In a common situation, e.g. running ~50W to drive an 87A to maximum legal output, using an xcvr capable of 150-200W, most modern SS xcvs will put out substantial spikes if their peak ALC exceeds 6 dB or so.

The GOOD NEWS is that when transceiver ALC is set reasonably close to normal by proper adjustment, the problem goes away. I used a TS-950SD for ~2 years with my 87A, then an FT-1000D for the past 6 years or so. Unless the operating conditions (mainly exciter output power) are changed fairly drastically, it's generally sufficient to check exciter ALC only when there seems to be a problem. I do it maybe once a month just to be safe.

NOTE that every reference to ALC above refers to ALC within the transceiver itself. Personally I never use external ALC feedback from the ALPHA to the xcvr, and we do not recommend it in general. It's completely unnecessary. Hope this is of interest, and maybe even helpful, to somebody. Sorry to be so wordy - don't know how to explain this particular issue briefly!

73, Dick W0ID (formerly W4ETO)