

INTERFERENCES FROM OLD POWER AMPLIFIERS

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One of the possible causes of interferences to reception of the radio and television from Power Amplifiers (PA) is degradation of an output tube or an output transistor of the Power Amplifier (PA).

Let's put the basic signs directing this cause.

At first, there are stable heavy interferences to radio equipment when the PA (or transceiver, in which one the PA is) works even on low - frequency amateur ranges 160- and 80 meters, where, as usual, such interferences are absent.

At second, it is very possible that the PA is "excited" at some restricted segments of amateur ranges, or at an amateur range, or when this one is operated at a definite mode – CW, SSB or RTTY. For example, a PA is excited by operation on SSB, but ensures stable running on CW. One more version, a PA is excited when it works in the beginning of an amateur range, but this one works good in the middle or in the upper end of this range.

At third, usually the invalid PAs consume a large d.c. current but give a small RF power. When the PAs consume a large d.c. current they, as usual, give a large level of interferences. When the PAs work at a small consumed d.c. current, they do not give interferences at all!

To improve this situation can only changing the degraded tube or transistor for a new one. Or, to reduce output power helps to remove the interferences.

Tubes...

It is quite possible to detect the degraded tube with metal anode in visually way. An anode of a new tube has evenly color, usually grey. An anode of a degraded tube has unnaturally color often the anode has an undulating spots. Joints of the degraded anode quite often have distortions.

Pins of some output tubes after a long-period operation are covered with oxides, especially if a power amplifier was maintained in a wet location, ever on open air, or in a location, where aggressive gases are in air. Sometimes, a non- hermetic lead-acid or alkaline accumulator placed near a PA causes to cover the pins by a layer of oxides. The cleaning of pins of tube socket often gives only short-term effect. Only soldering the oxidation pins of tube to pins of tube socket improves the situation.

Transistor...

Power transistors do more harm than tubes. All modern RF bipolar transistors have a structure consisting of many independent emitters. When only one emitter is degraded the whole transistor is degraded, too. The degraded emitter can produce harmonics of the base signal that causes RFI and TVI.

The degradation is quite possible at a current overload or just long-lived operation of a transistorized PA. The overload can be as on the input signal - overflow of a base current, so on the output signal - overflow of a collector current. Even a short-term overload can damage a power transistor. Very often when the degraded transistor is checked at d.c., it behaves as operable. Only changing of a degraded transistor for a good one allows to find the true source of the interferences.

Cool soldering...

Cool soldering represents especially unpleasant phenomenon for both, as transistor as tube PA. It can reduce to appearance of heavy radio interferences. All suspicious soldered places are knocked by wooden or plastic stick and monitoring at thus for interferences. After that the fond cool soldering is thoroughly soldered.

Remember, a long term service of any PA is possible only when all modes of operation of output transistor or output tube are at right conditions.

