

TS-480 PEP power level mod

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Like many owners of the Kenwood TS 480 I noted the SSB level output appeared very low on SSB compared to CW.

I measured the CW power output on a Bird Watt meter and it was exactly 200 watts as per the specs for a Kenwood TS 480HX 200 watt model.

I then tried SSB and it seemed very low so I looked at the PEP power output level. It's also an issue on the 100 watt version.

The PEP output was only 84 watts or 30 watts RMS. I then searched the net to see what others had found and or have done and found this is a very common issue. Some suggested inserting a resistor to give the PA more output. This risks damaging the output finals and does not fix the problem.

A resistor between L504 and ground will increase the output on CW & SSB but the SSB PEP will still be proportionally below the CW level and you would risk blowing a final on tune up or operating for periods on CW or FM.

It's important to note that most equipment will not measure PEP power accurately so I did a number of tests to verify the PEP output. I used a 2 tone signal then checked the average power then calculated PEP. I then checked on a spectrum analyzer for power output verse signal width etc. There is a good reason why Kenwood have reduced the PEP power as the final stage develops inter-mod very easy.

I inserted a 10uf electrolytic capacitor (25Volt or greater) between L504 (VSF test point side) and earth. This does not change the 200 watt CW power output but it does increase the SSB PEP output. It can take it over 200 watts PEP but this results in a very dirty and wide signal.

L504 is on the PCB that the two antenna cables terminate on. It's easy to solder the capacitor to L504 and earth without disturbing anything else and easy to remove. The board has the TX-RX relay and ant 1 or ant 2 selection relay at the rear and is on the right topside as per the photo.

Increasing the capacitor size does also increase the PEP output further but it also causes delays on the output display meter and huge inter-mod.

With a 10uf capacitor I now get 200 watts PEP of clean RF output with ease. It will in fact exceed 200 watts PEP if I turn up the processor but the signal becomes dirty. The maximum I would go to is 200 watts PEP as the inter-mod becomes well out of the TS 480 HX spec. After this mod you will need to watch your levels and band width if you use the compressor above 50%. If you keep an eye on the ALC you should be fine. The two tone test now shows 70 watts RMS output on a Bird watt meter and that equals 200 watts PEP as a rough guide. Before the mod the output was less than 30 watts RMS.

Be very careful doing this mod. I take no responsibility for anyone doing this mod as it's not a factory recommendation nor approved Kenwood mod. The photo and diagram shows the modification I did and it's easy to remove.

Regards Gary ZL3SV

