



STX RF Amplifier Module

Field Repair Kit Application Guide

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1 Purpose of this Document

The purpose of this document is to describe the necessary steps required to change the RF Amplifier pallet in the field.

2 Features

The following is a list of key features implemented in this release.

- RF Pallet removal from shipping plate
- Proper pallet removal and replacement
- Thermal Compound

3 Tools / Items Needed

- #1 Philips screw driver
- #2 Philips screw driver
- 3/16" hex nut driver or wrench
- 3/32" allen wrench
- STX PA Assembly Pallet (979-4101 or 979-4101-100)
- 700°F Soldering Iron with chisel Tip
- SN 63PB37 Solder or Equivalent
- General Soldering Tools

4 Estimated Setup Time

Providing that you have the tools listed above, it will take approximately 90 minutes to remove the old pallet from the assembly and re-install the new pallet properly.

5 Remove PA module from STX chassis.



WARNING: ENSURE ALL PRIMARY POWER IS DISCONNECTED BEFORE PROCEEDING.

Step 1 – Power unit OFF, disconnect all transmitter primary power, remove from rack and place on bench.



Step 2 – Remove and retain the transmitter top cover screws using a #2 Philips screwdriver.

Step 3 – Remove and retain the screws from the PA cover using a #1 Philips screwdriver.

Step 4 – Disconnect ribbon cables at J2, J12 (add-on PA only) and J13. Remove cables at J1 and J4. Remove coaxial cable at J11.

NOTE: It is important to remove the transistor and resistor screws prior to removing the remaining board attachment hardware. This prevents stress to the transistor and resistor leads and board traces.

Step 5 – On the transmitter PA, remove the 3/32" Allen hex mounting hardware from transistors Q1 through Q4 and Q8.

Step 6 – Remove mounting hardware from R102, R110, and R112 on combiner board.

Step 7 – Remove the silver color 3/16" hex stand-off and mounting hardware from the circuit board.

Step 8 – Un-solder the 3 heavy jumpers from the Combiner; 1 RF output and 2 grounds, being careful not to overheat the board. DO NOT CUT THE HEAVY JUMPERS AS DAMAGE TO CIRCUIT BOARD WILL RESULT.

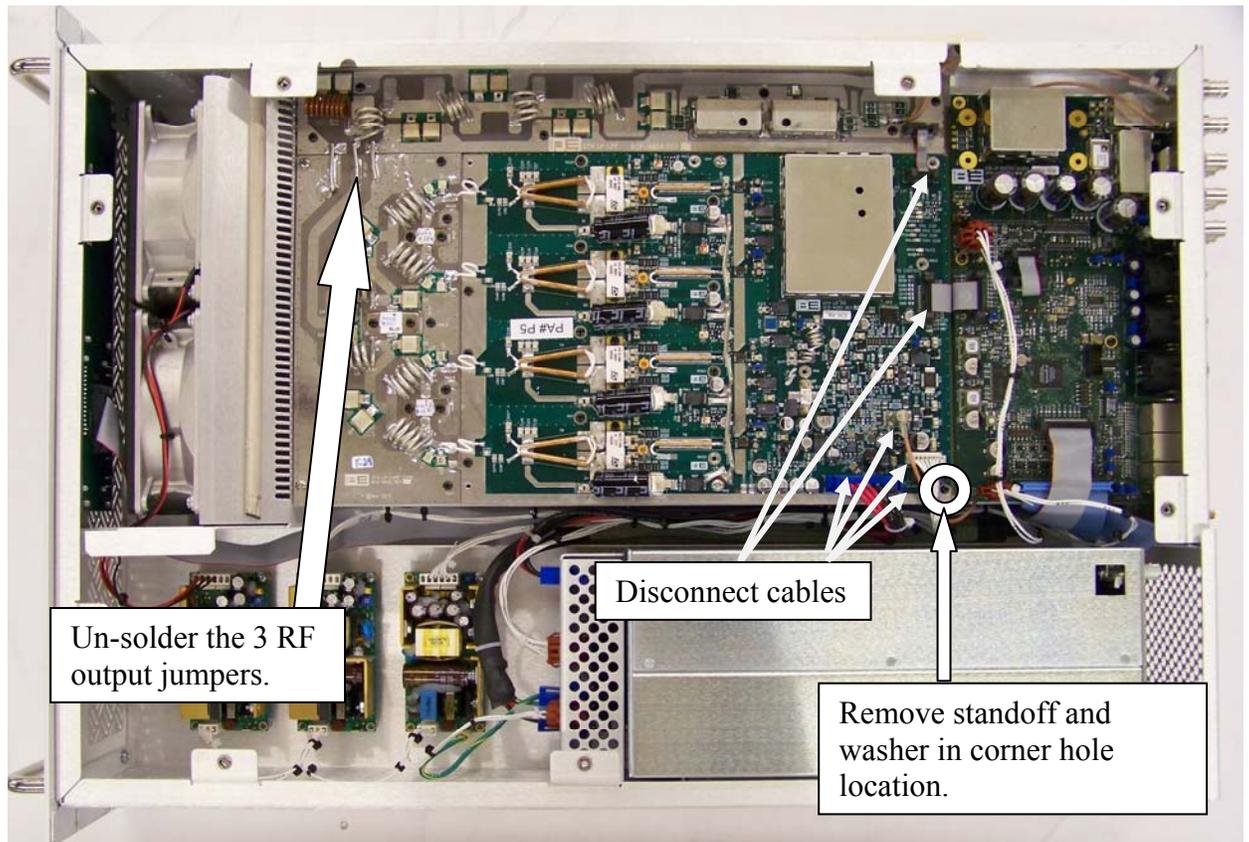


Figure 1
Disconnect cables and jumpers

Step 9 – Take out remaining hardware on transmitter PA and combiner.

Step 10 – Remove the hardware from the replacement PA; Q1 – Q4, Q8, R102, R110, and R112 first. Then remove the remaining hardware from the board. This prevents stressing the component leads.

Step 11 – Remove existing PA and Combiner from Heat sink. Retain the aluminum spacer plate that is under the combiner assembly for reuse.

Step 12 – Remove replacement PA from shipping plate, being very careful not to disturb any coils or other components. Handle carefully not to flex the assembly while moving to the heat sink. Use extreme caution not to stress the MOSFET or coils physical connections.



IMPORTANT; DO NOT INSERT THE SHIPPING PLATE IN THE TRANSMITTER ASSEMBLY.

6 Reinstall new RF assembly into chassis

Step 13 – Apply thermal compound to the bottom of the PA transistors Q1 – Q4 and Q8, and the combiner resistors R102, R110, and R112. Using an acid brush or foam paint brush apply a thin uniform layer of thermo compound such that only a very small amount will squeeze out after the hardware will be tightened.

Step 14 – Ensure ONLY 1 copper spacer is under Q8.

Step 15 – Gently place the PA module assembly on the heat sink using the aluminum combiner plate retained during disassembly. Ensure the ribbon cable going from the Controller to the PA is tucked down between the two boards.

NOTE: It is important to install the circuit board attachment hardware prior to the transistor and resistor screws. Use the reverse process from the removal procedure. This prevents stress to the transistor and resistor leads and board traces.

Step 16 – Secure the Philips head mounting hardware retained earlier to hold only the circuit board to the heat sink assembly. There will be screw locations left open for the PA cover noted below and one standoff.

NOTE: Q1 – Q4 and Q8 use allen head screws, the use of the other hardware will damage the transistor and is not covered by warranty.

Step 17 – Tighten the PA transistor and combiner resistor hardware removed earlier to the heat sink and tighten to 6 inch pounds of torque. Proper torque can be achieved without an inch pound torque tool by using the thumb and index finger on a screw driver and not using excess pressure while turning the screw driver.



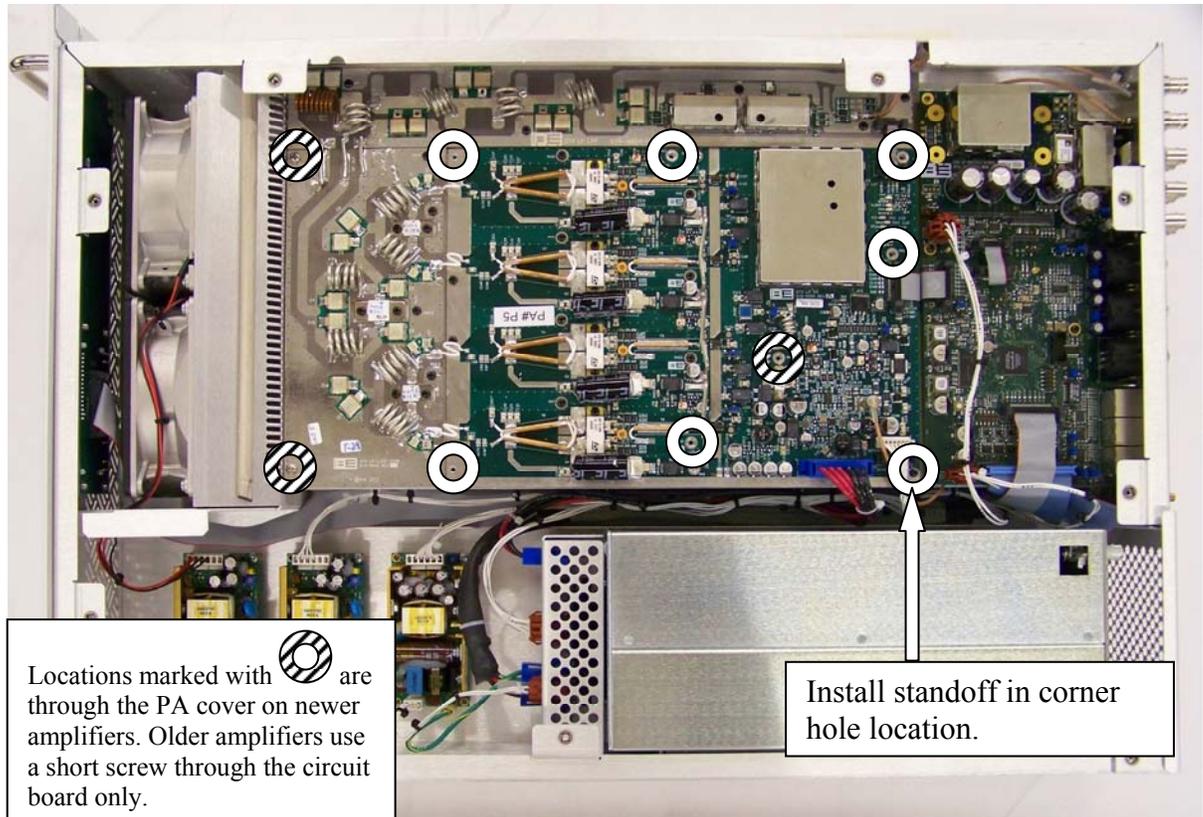


Figure 2
PA Cover screw locations

- Step 18** – Re-solder the Heavy RF wire jumpers between the PA and the output filter. Ensure there are no solder shorts to ground.
- Step 19** – Reconnect the cables.
- Step 20** – Verify the blue jumpers are in place. They should be on the center two pins of the 4-pin header shown in the following figure.

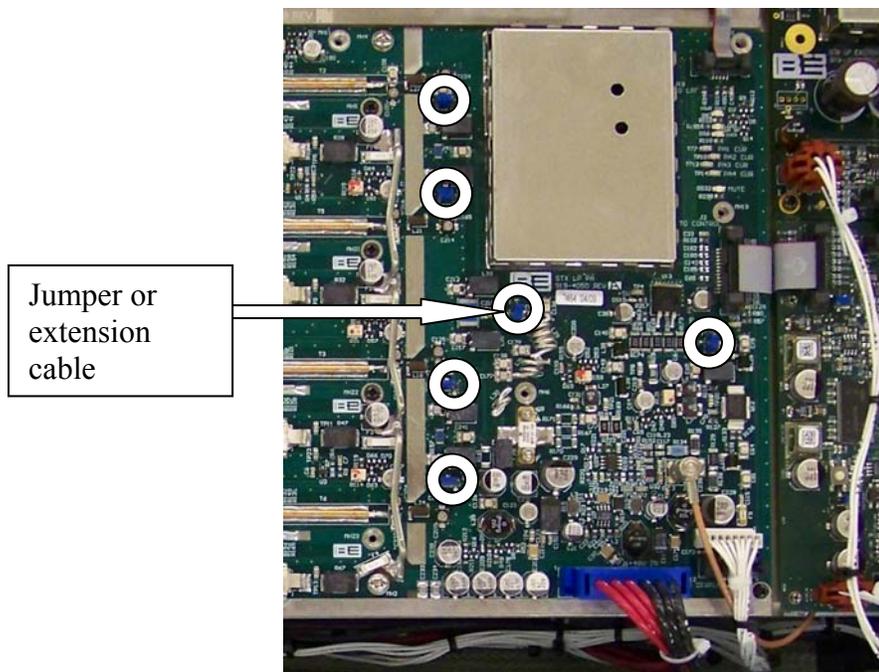


Figure 3
Verify Jumpers are on center two pins

NOTE: Unit can be bench tested now to observe amplifier currents are approximately the same, or it can be done in the rack as outlined in the following steps. You will need a suitable load to bench test this transmitter.

Step 21 – Replace the PA cover.

Step 22 – Replace the transmitter top cover.

7 Initial turn-on after PA replacement

Step 23 – Install the transmitter back into the rack, hooking up input voltage and antenna. This can be done on the bench as noted above, then it would not be necessary to do again in the rack.

Step 24 – First turn on the transmitter at low power, preferably 250 watts, and check the operating current of each amplifier. They should be within 1 amp of each other

Step 25 – Increase power output to full forward power and observe operating currents of each amplifier.

8 Troubleshooting

VSWR fault: Output connector is not soldered adequately, improper external 50Ω load/antenna.

If transistor currents are not approximately the same: verify the blue jumpers are installed.

9 RF Technical Services Contact Information

RF Technical Services -

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