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FXi 60/250 Exciter

Power Supply Q10 Upgrade Application Guide

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Revision B
November 11, 2011

FXi 60/250 Exciter

Power Supply Q10 Upgrade Application Guide

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1 Preparation

1.1 Overview

Problem: Short Interruptions in the FXi Power Supply input will stress Q10 causing possible failure upon startup after an ac power off cycle.

Affected Units: All FXi 60 or FXi 250 Exciters manufactured prior to August 26, 2011 will need the Q10 upgrade. Additionally, power Supply units with board revision AA or older will need the capacity added. Board revisions AB or later have a larger capacitor installed at the factory and do not need additional capacitance to be added.

Fix: The upgrade consists of two parts; replacing Q10 and if needed adding a capacitor depending on revision of your board. Q10 is a drop-in replacement whereas the capacitor may be needed in addition to an existing capacitor on the board.
The capacitor has been added since May 2008 and is noted by a label marked on your board that this deviation has been installed (deviation 1178).

1.2 Tools / Items Needed

Supplied By Customer:

- ☐ 700˚F Soldering Iron with 1/10" Pencil Tip
- ☐ SN 63PB37 Solder or Equivalent
- ☐ General Soldering Tools
- ☐ Needle nose pliers

Parts needed:

- ☐ 979-0540-Q10; Kit, Field Upgrade FXi 60/250 Power Supply Q10

1.3 ESD Awareness

During the upgrade process be sure to exercise ESD precautions.

1.4 Estimated Time for Replacement

Providing that you have the tools listed and items listed above, it will take approximately 30-35 minutes to replace Q10 and add a capacitor over C58 on the Exciter Power Supply Board.

2 Remove power supply

2.1 Turn the FXi AC Power Switch to OFF

2.2 Disconnect Cabling from the FXi

2.3 Remove the FXi from the Rack and place on Bench

2.4 Remove Power Supply Hardware

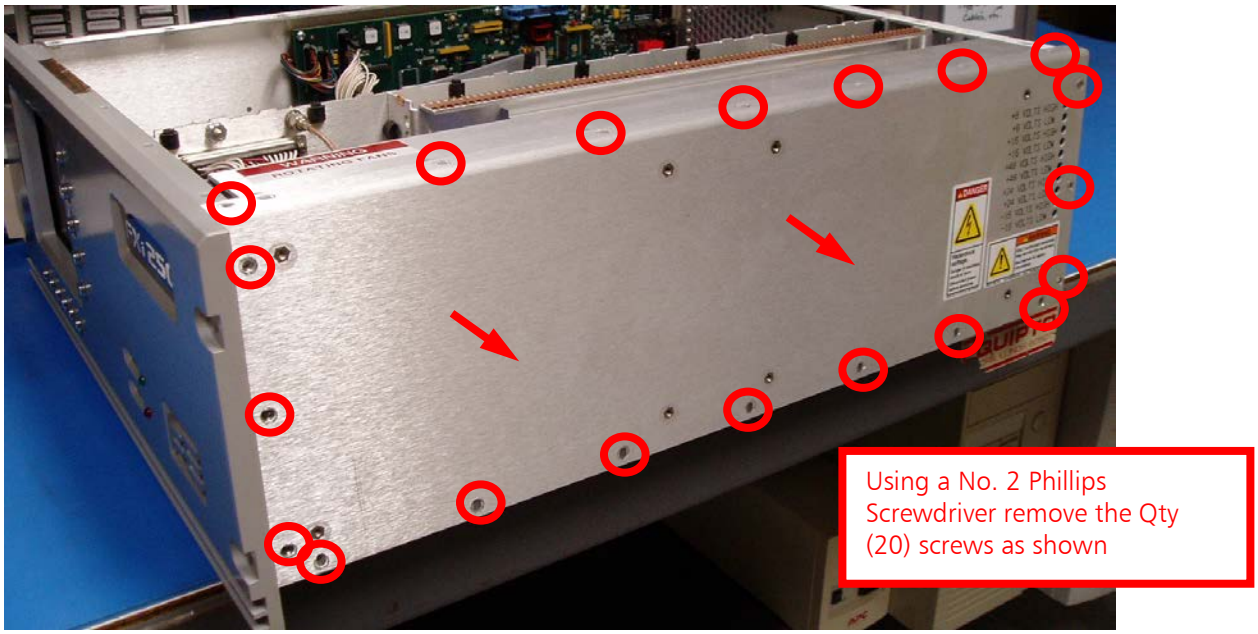

Figure 1 – Power Supply Hardware Removal

2.5 Remove Power Supply

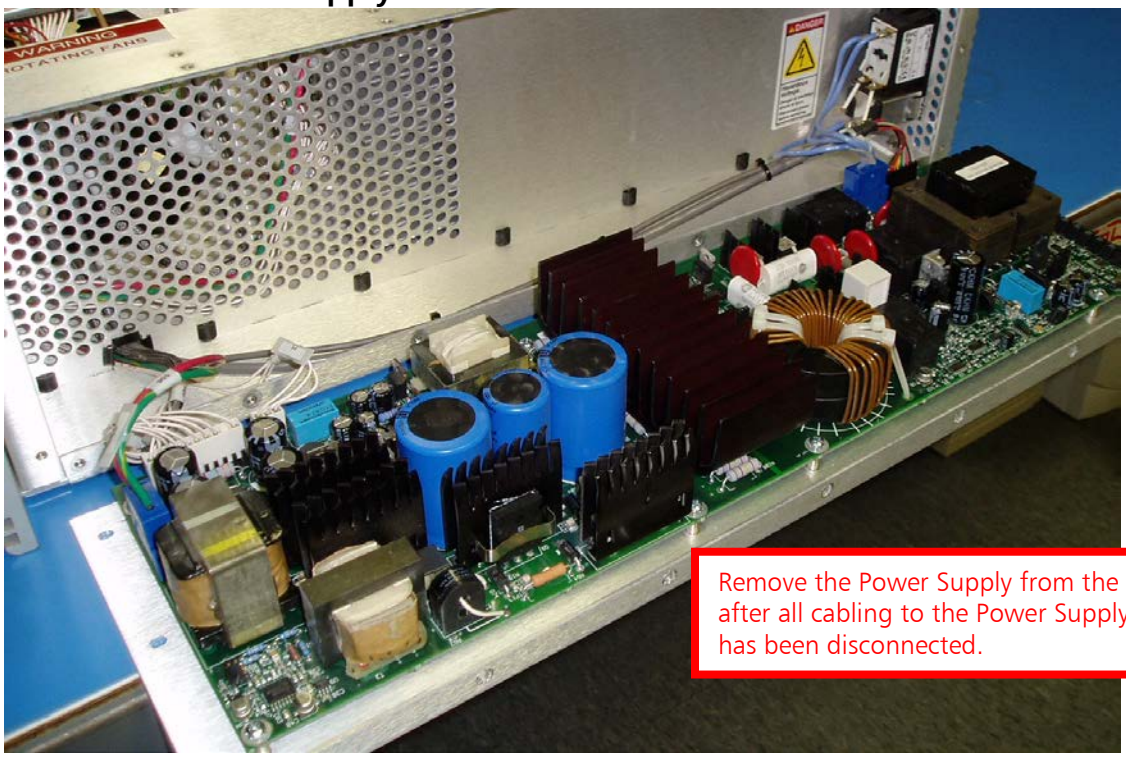

Figure 2 – FXi Power Supply Removal

3 Add capacitor over C58

In addition to the Q10 replacement, users are also required to update the power supply by ensuring C58 contains a 22μF capacitor. NOTE: A 22μF C58 capacitor is required to prevent a pulse from U12 which will destroy Q10 during AC power off cycle.

Not all units will need this capacitor added. Early versions have only a 1 μF capacitor chip cap (see Figure 3) and will need the additional capacitor added.

Boards manufactured, or factory serviced since May 19, 2008 have the additional capacitor added (see Figure 4), no additional capacitor will be needed. On board revision AB or newer, the capacitance has been increased on the on-board capacitor, no modification will be needed.

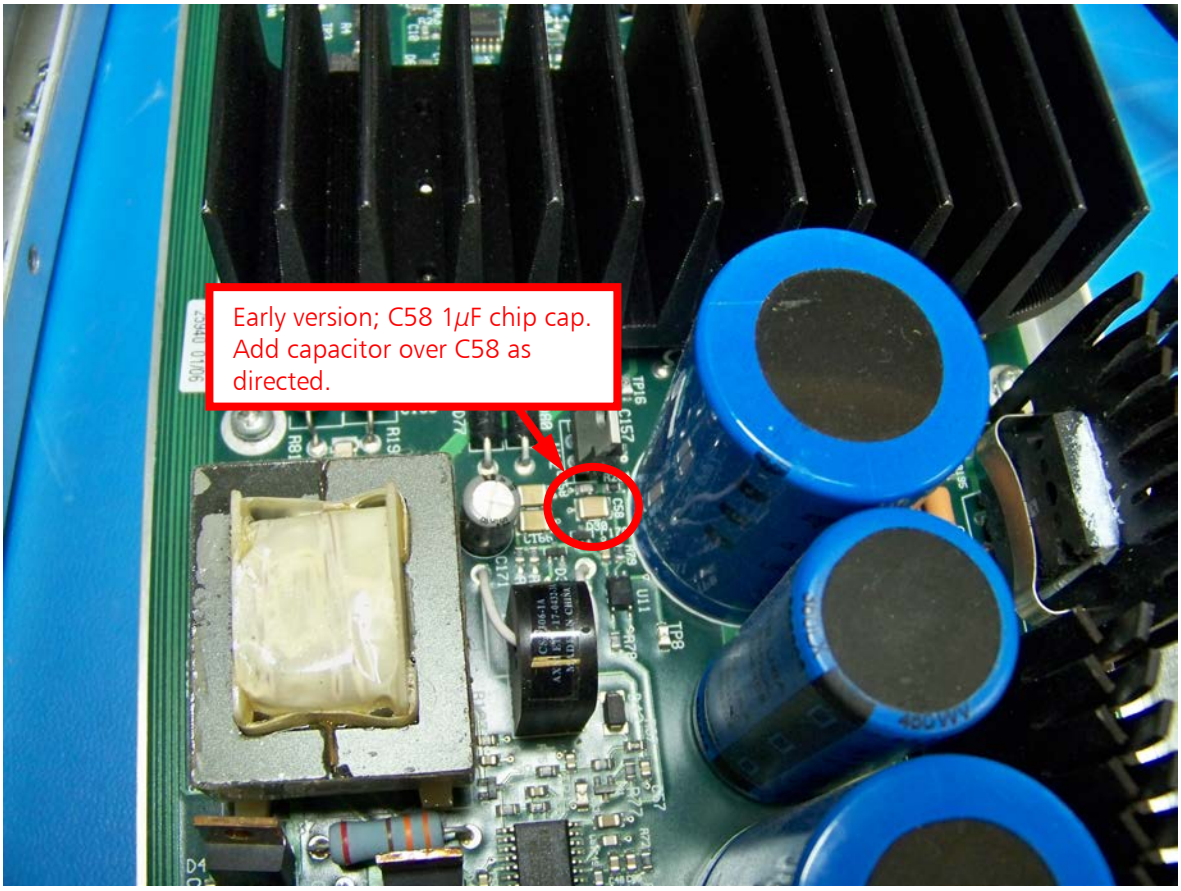

Figure 3 – Early version, will need additional capacitor added.

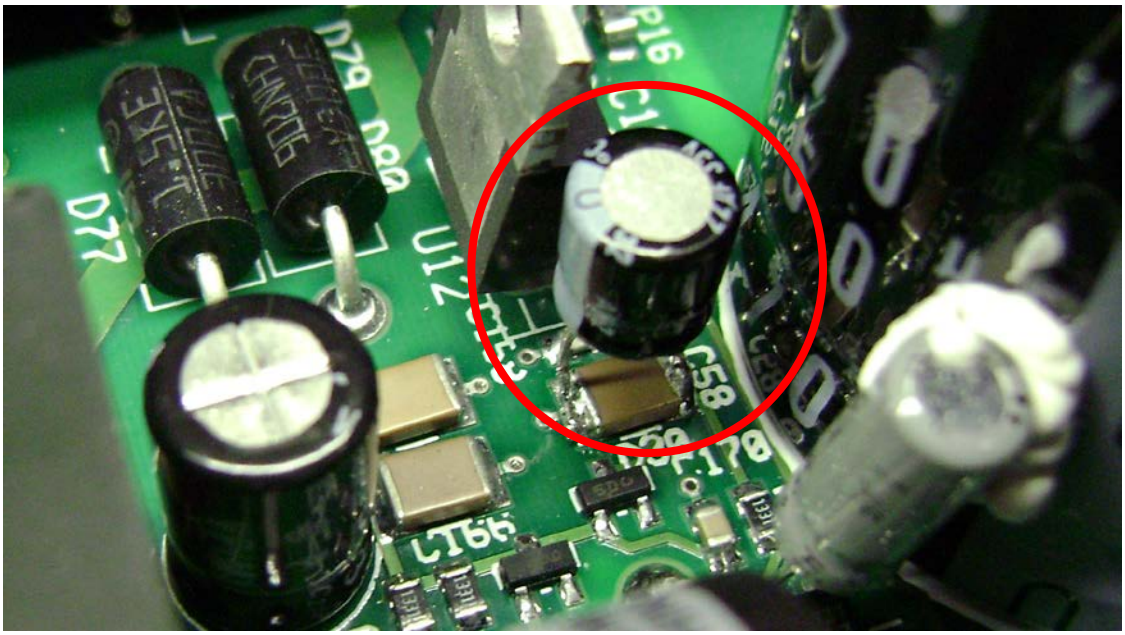

Figure 4 – Board manufactured or factory serviced since May 19, 2008 with the capacitor already added. This will be noted by a sticker on the board "Dev. 1178." No additional capacitor is needed.

Install 22μF capacitor 020-2273 over the 1μF chip capacitor, note polarity of capacitor!

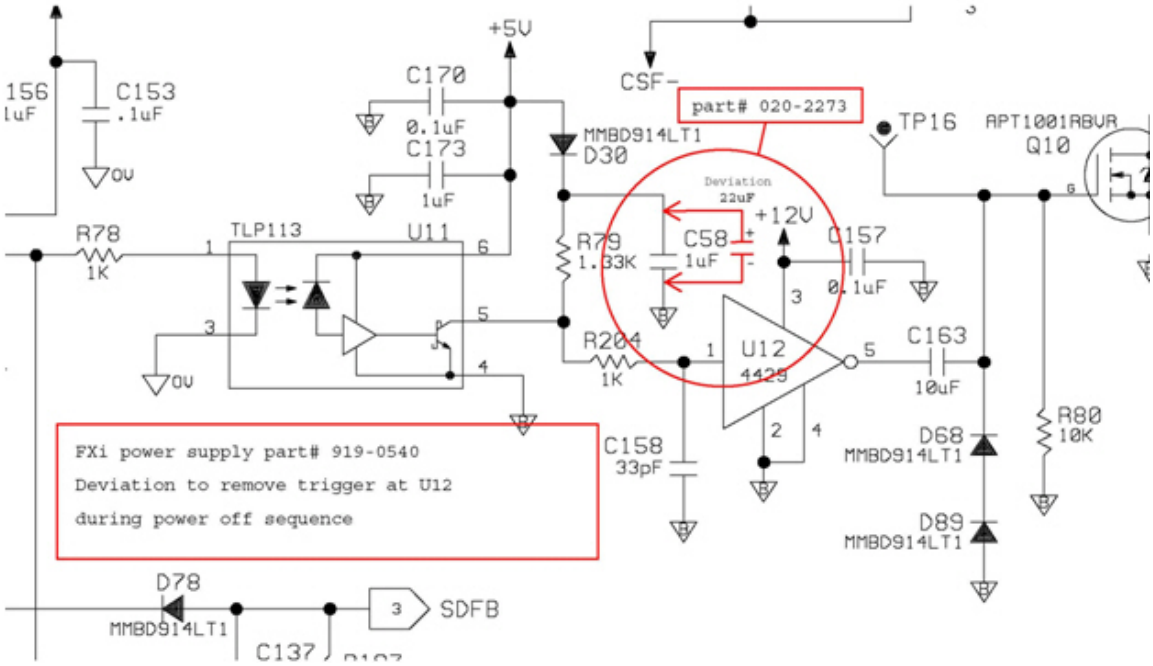

Figure 5 – Board schematic with deviation added

Bend the leads at 90° as shown in figure 6. Position the capacitor so the negative lead is farthest away from the large 470µF 450 volt capacitor as shown in figure 4. Carefully solder the leads to C58.

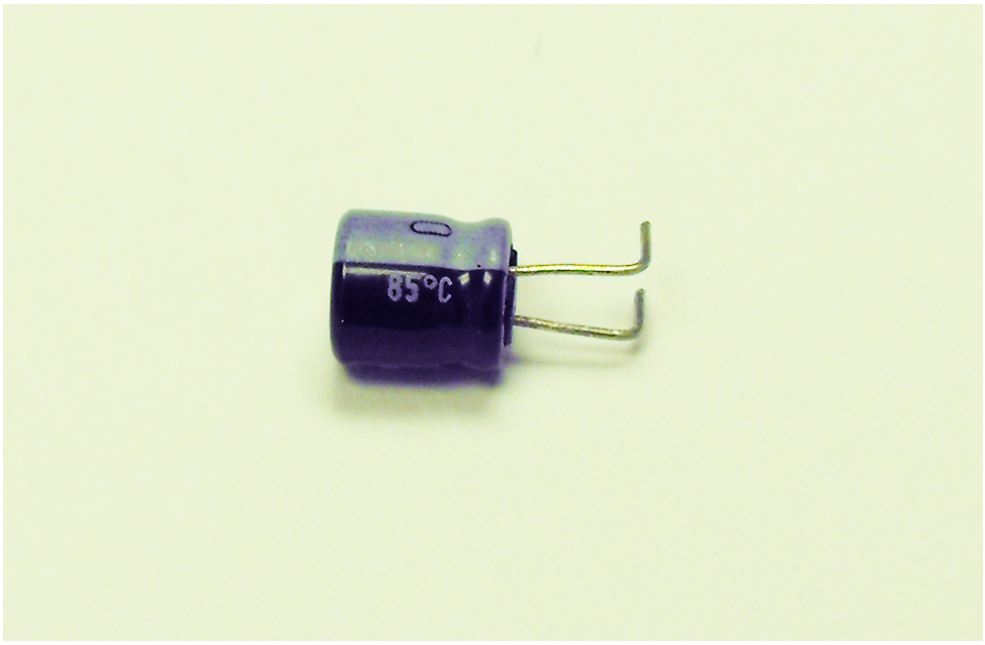

Figure 6 – Capacitor leads bend for soldering to C58.

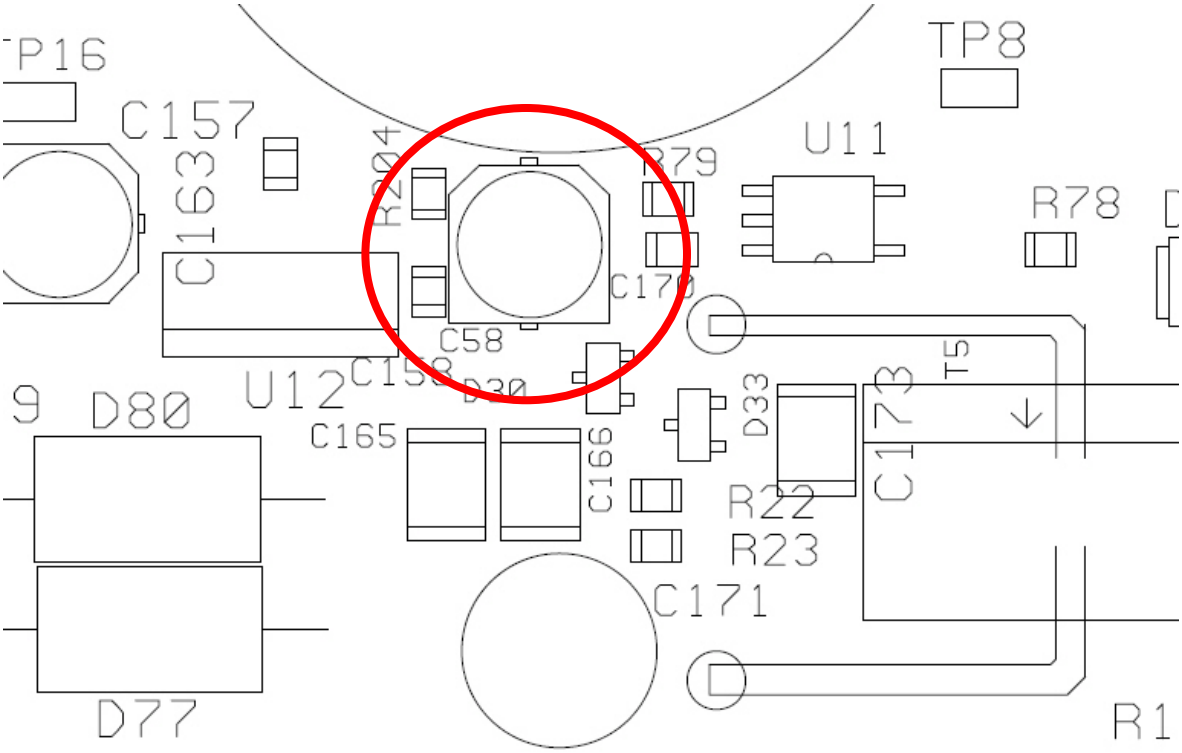

Figure 7 – Rev AB or newer boards with C58 22µF on-board capacitor. No additional capacitor is needed.

4 Replace Q10

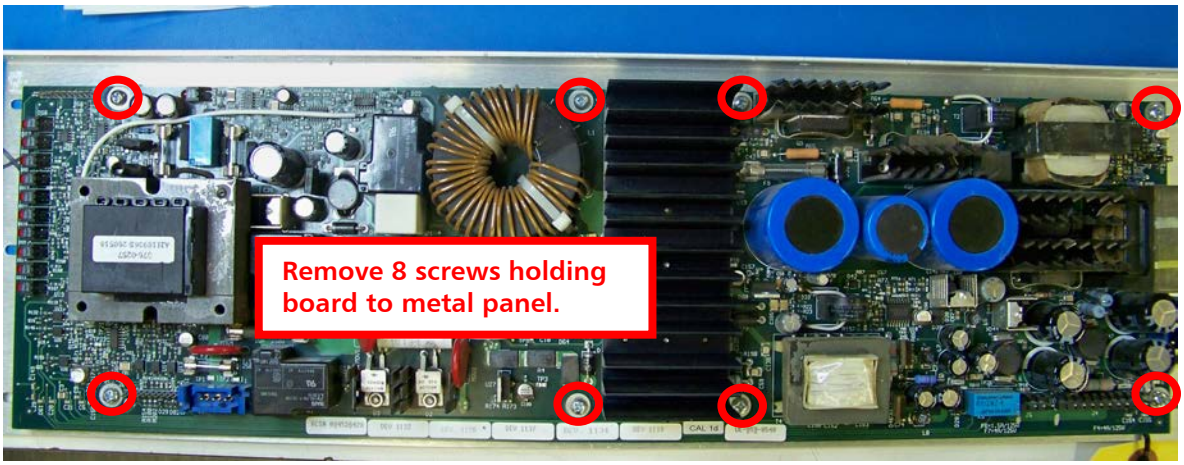

Figure 8 – Power Supply screws

4.1 Remove 8 screws holding PC board to metal panel

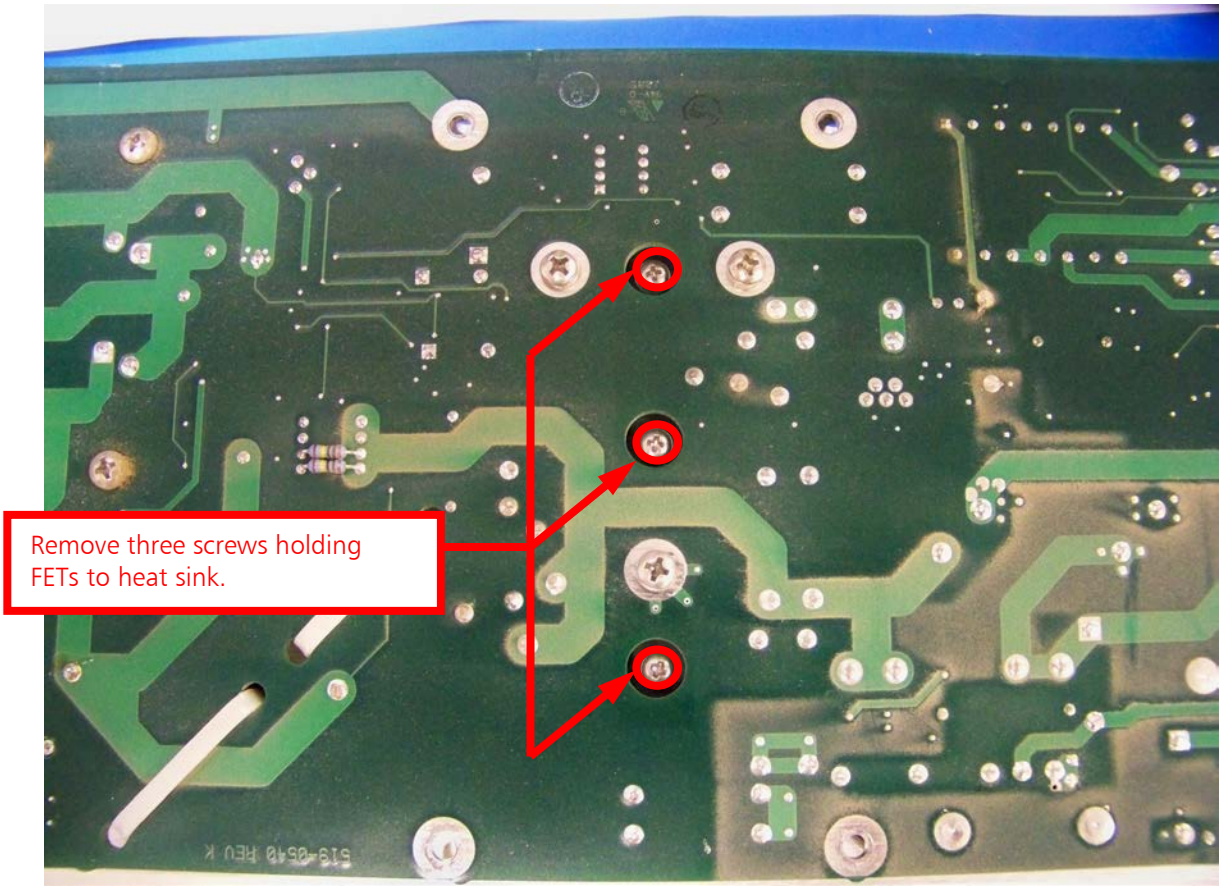

Figure 9 – Remove FET screws to heat sink.

4.2 Remove 3 screws holding FETs to heat sink

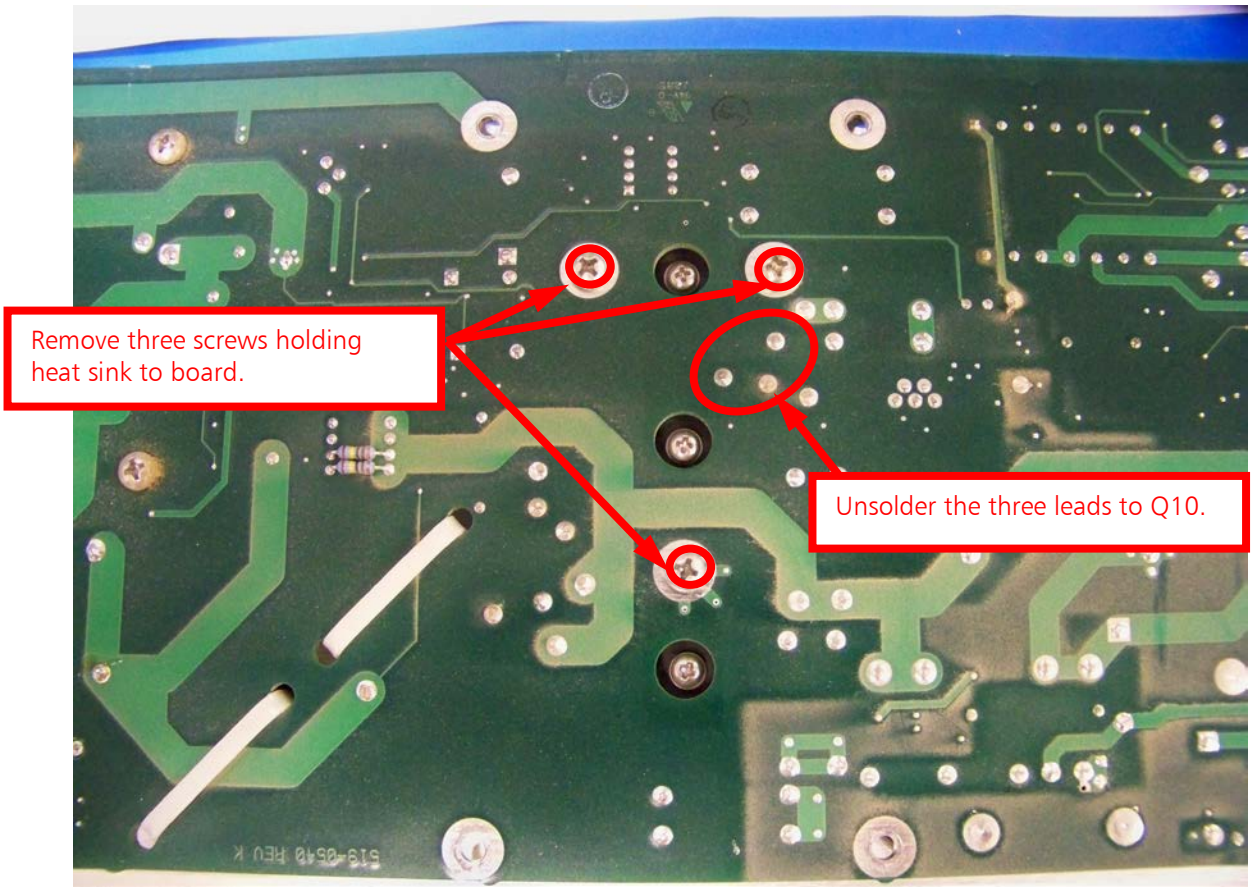

Figure 10 – Heat sink to pc board screw removal

4.1 Remove 3 screws holding heat sink to board

Use caution not to damage the thermal pad insulator when removing the heat sink from the devices.

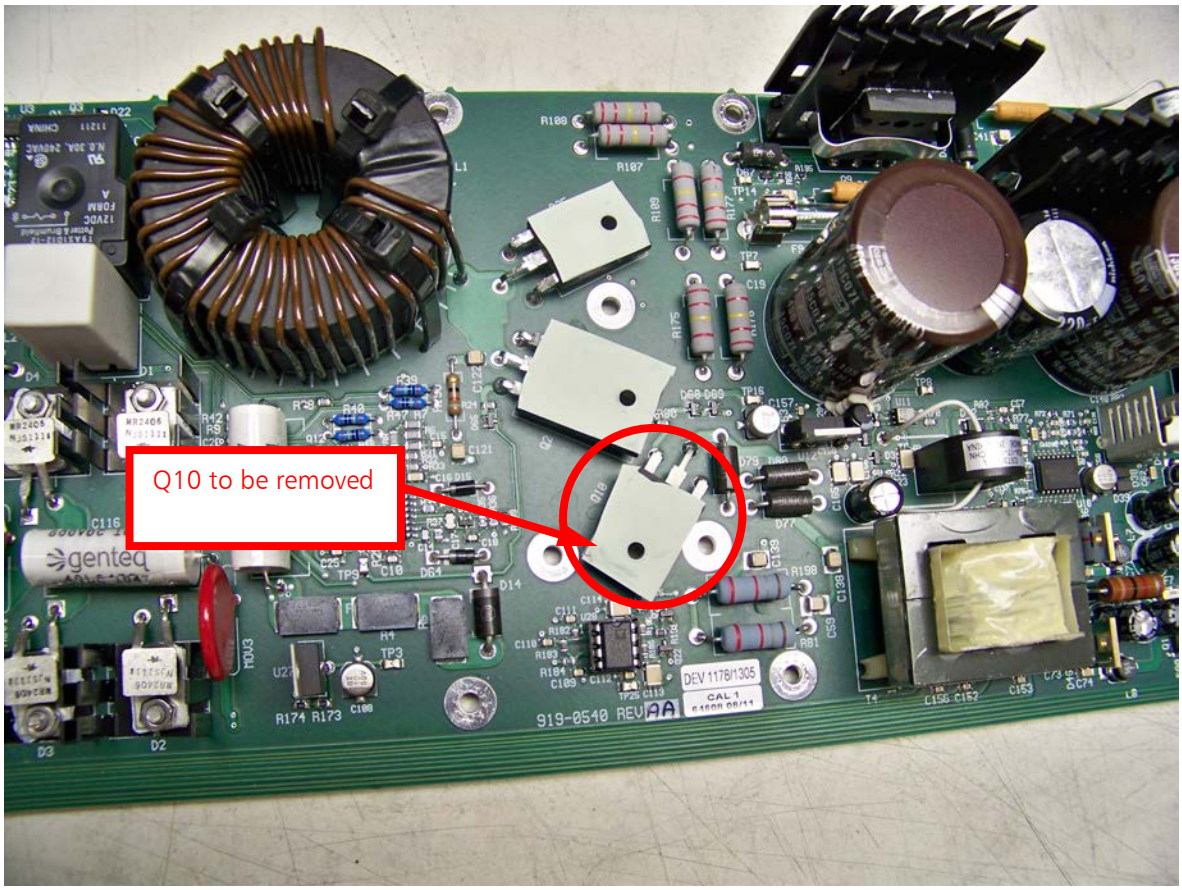

Figure 11 – Heat sink removed from board

4.2 Replace Q10.

Use Part number 210-1201 forming the leads like the device being removed, reuse the existing thermal pad insulator or replace with supplied thermal pad insulator as needed. Insert FET into board, do not solder yet.

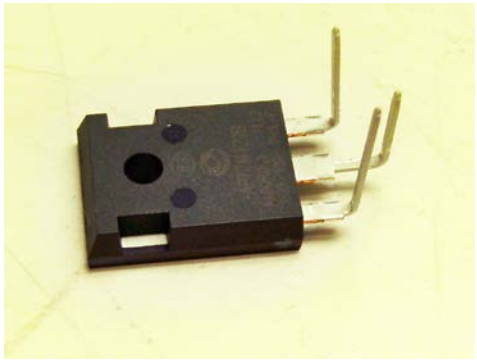

Figure 12 – FET leads formed for board insertion.

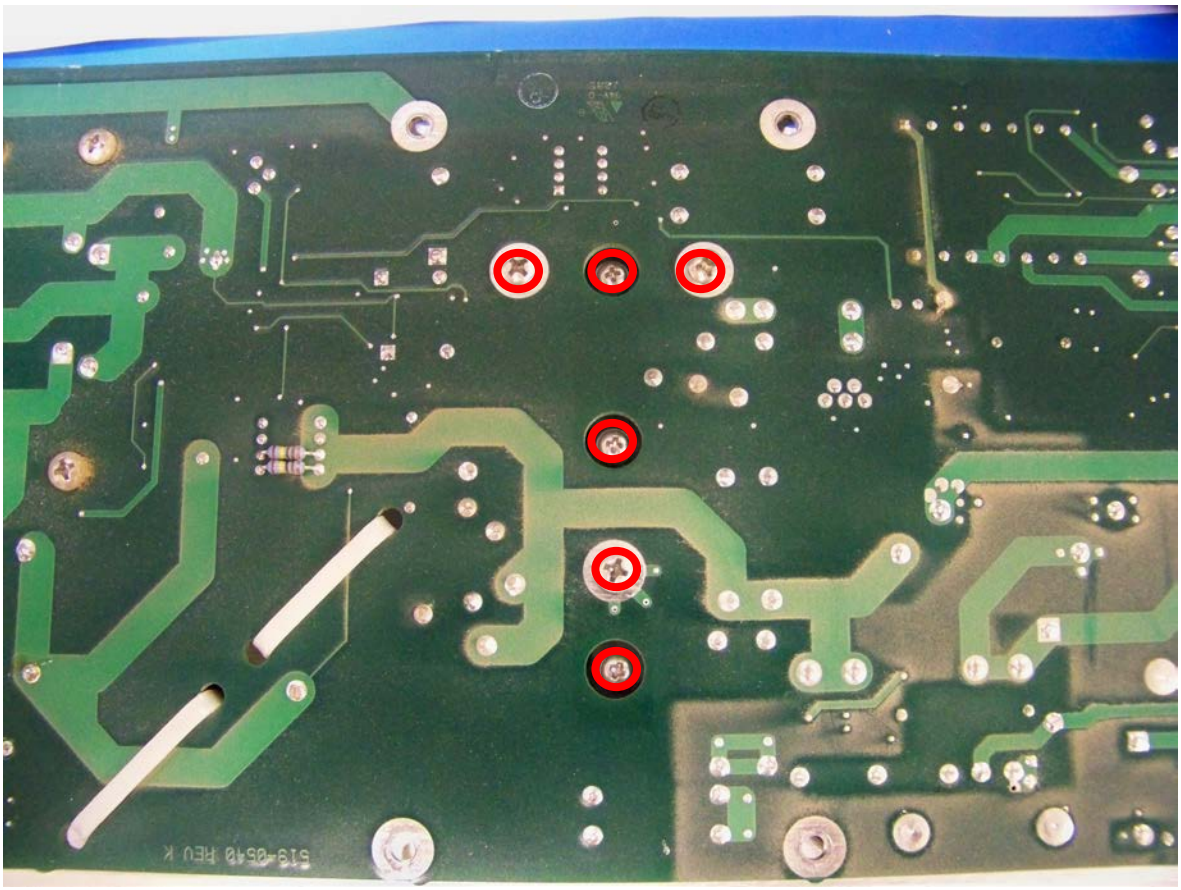

Figure 13 – Reattach screws

4.3 Place heat sink into position

Position heat sink and start the heat sink screws removed earlier first, then the device screws to the heat sink. DO NOT tighten any screws until all have been started. Observe that the insulator pads are in place and the FET/regulators are flush against the heat sink. Then torque to 6 inch pounds.

4.4 Trim FET leads and solder FET to board.

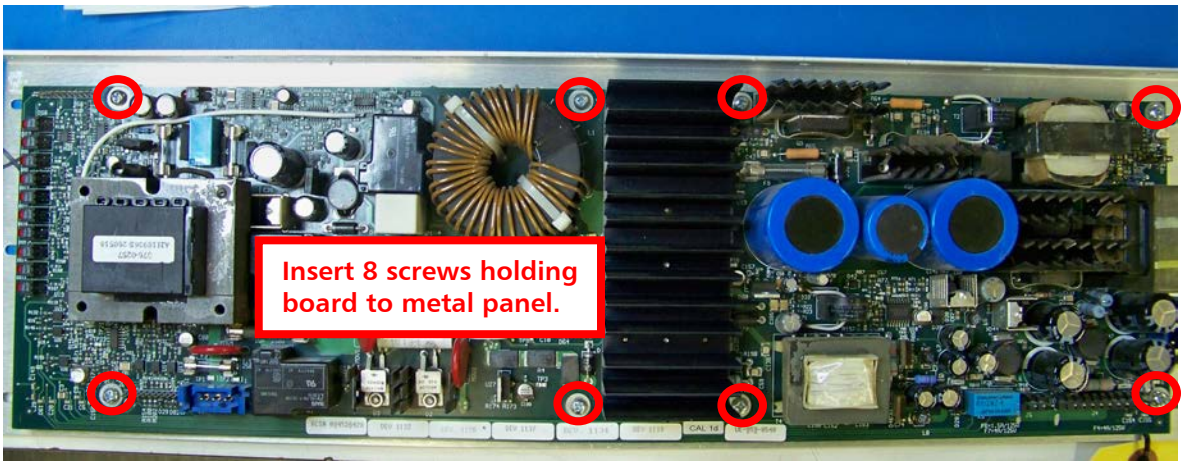

Figure 14 – FXi Exciter Power Supply Installation

4.5 Install board to side panel using 8 screws removed earlier

5 Re-Install Power Supply

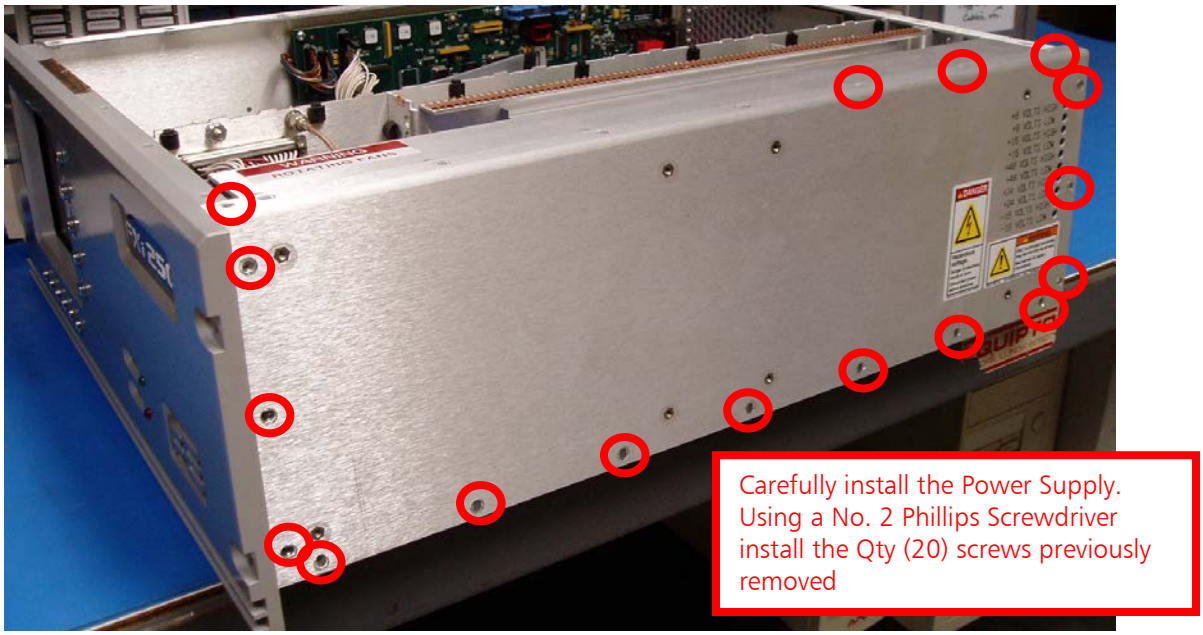

Figure 15 – FXi Exciter Power Supply Installation

5.1 Connect cabling to the chassis

5.2 Install screws removed previously

5.3 Install Exciter Back Into Rack

5.4 Re-Connect All Cabling

5.5 Turn AC Power Switch ON

The Exciter should now be Operational.

6 RF Technical Service Contact Information

RF Technical Service -

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