MLA2500B/4CX800A Conversion

(prepared 18 April 1996, by Robert Schetgen, KU7G)

Refer to: Issue of May 1996 QST page 45 ‘New Life for Dentron MLA2500s’
By Daughters, George T., AB6YL

Text refere to: **Tube Cooling Chimney (Figure F)**
A 2.80-inch-diameter hole was bored through the Teflon to provide a loose slip fit on the anode cooler (cooling-fin assembly) of the 4CX800A. A smaller diameter would be too tight to allow for some thermal expansion, or not fit at all; any larger might allow too much air to escape around the anode cooler, rather than going through the cooling fins. The diameter on the socket end of the chimney can be anywhere between 2.9 and 3.0 inches. A smaller diameter would not clear the extensions for the socket mounting tabs; a larger hole would be too close to screw holes for satisfactory socket mounting.

The height of the 3-degree tapered section should be about 1.5 inches, to match the distance between the bottom of the anode cooler and the socket. The length of the overlap of the chimney and anode cooling structure is not critical. My chimney has a rectangular external shape, which provides room to drill and tap two #8-32 holes. Mount the chimney on the inside of the back panel with two #8-32 screws to hold it in place.

If you choose to mount the tube vertically (as were the original 8875s), gravity will adequately hold the chimney in position, and a thin-walled (about 0.1 inch) circular chimney would be fine. In this configuration, however, the cooling scheme would have to be different from that presented in the article.

Text refere to: **Screen-Supply Capabilities (Figure K)**
The voltage/current characteristics of the regulator are shown in Figure K. The circuit can supply a maximum of about 13 W to the screen grid. (An hyperbola representing a screen dissipation value 15 W is shown on the figure at the upper right.) The "knee" in the curve depends upon a combination of Q2's beta and the value of R11 in Figure 1 of the article. Choose a value for R11 that places the "knee" at about 35 mA (try values between 10 and 18 ohms.) In any case, make sure the voltage is essentially constant from 0 to 30 mA, and that no combination of output voltage and current is above the 15-W line.

Text refere to: **Lab Test Results**
Figures L through R are spurious-emissions plots from ARRL Lab tests of the converted MLA2500B. Figure S is a plot typical of the IMD test. Regretfully, plots for the 30-m and
15-m bands are not available. The amplifier was tested on those bands, and the worst-case spurious emissions were -42 dBc for a 10.125-MHz test and -50 dBc for a 21.225-MHz test.

Text refere to: **Figures**
All photos and line drawings are stored in .JPG (pronounced J-PEG) format; Lab plots are stored in .PCX format, as used by PC Paintbrush, which is distributed with Microsoft's Windows operating system. These formats were selected to conserve space. Both formats are supported by many graphics viewers, such as Paint Shop Pro, version 3.11.

All of these graphics have been produced and displayed on a Gateway 2000 4DX-33 system with 8Mb RAM, running Windows for Workgroups Version 3.11. If you have trouble viewing these files, contact the ARRL Technical Secretary* and request the printed version of these files. Ask for the MLA2500/4CX800A Conversion package from May 1996 _QST_. If you are an ARRL member, send $5 (nonmembers, $7.50) to cover shipping and handling. (This does not constitute a recommendation of any software, format or product by ARRL.)

* ARRL contact information appears in the current issue of QST magazine, which is available at most public libraries.

Figure Captions

Fig. A. Grid-current indicator

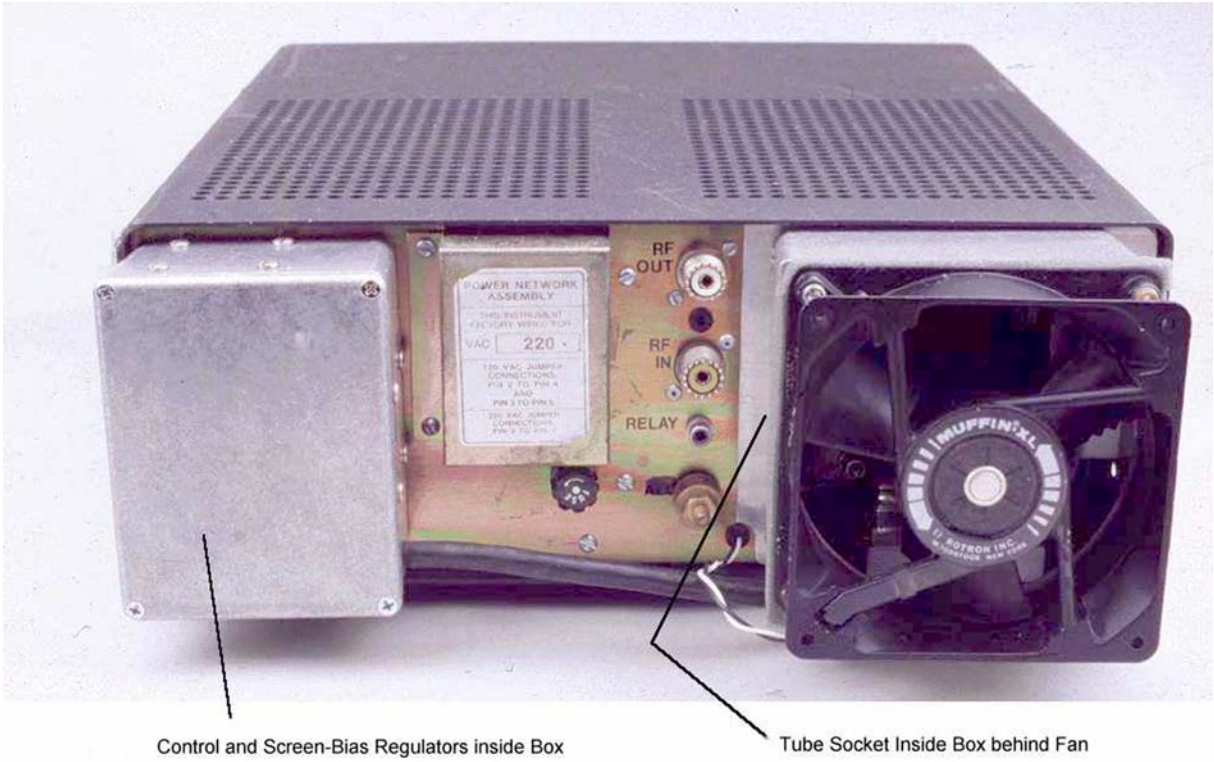


Fig. B. Rear View - Muffin fan, socket box, screen-and control-grid bias box

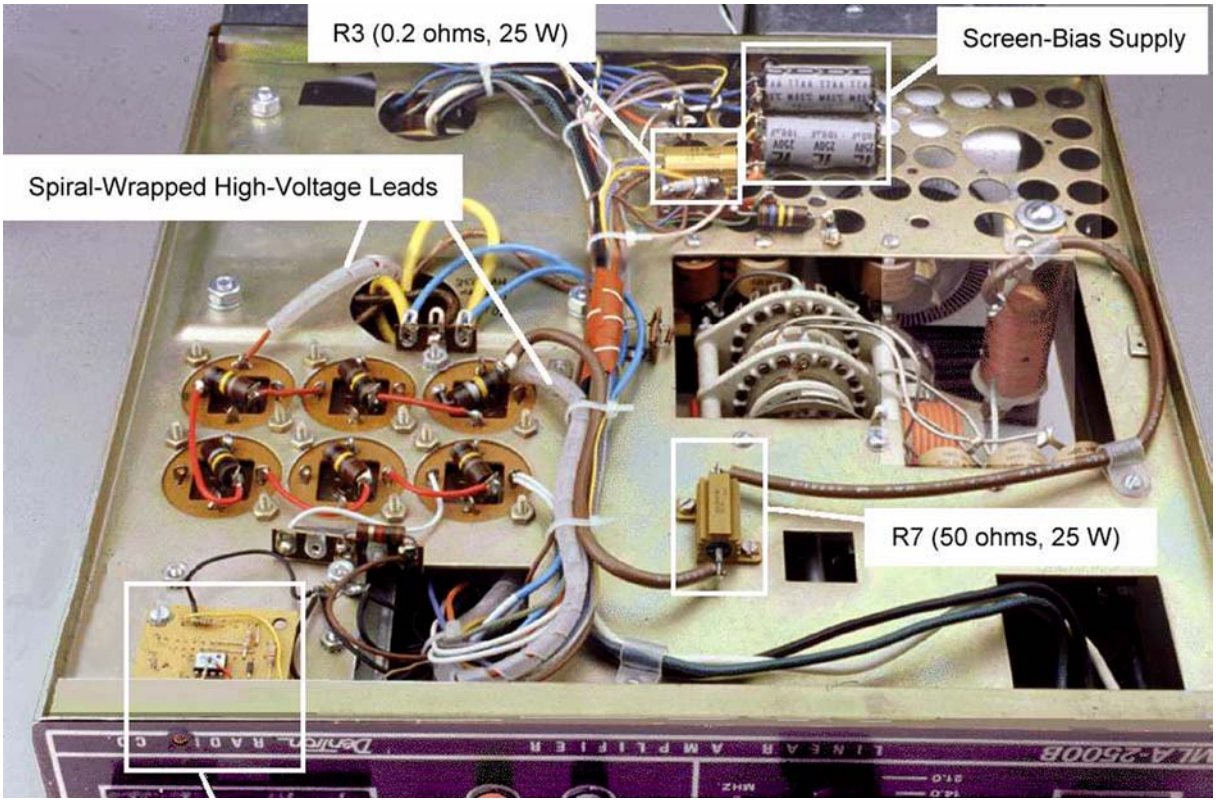


Fig. C. Chassis - Bottom View, Grid-current detector, indicator and PC board, R7,R3, spiral-wrapped HV lead, screen-bias supply (regulator in Figure I)

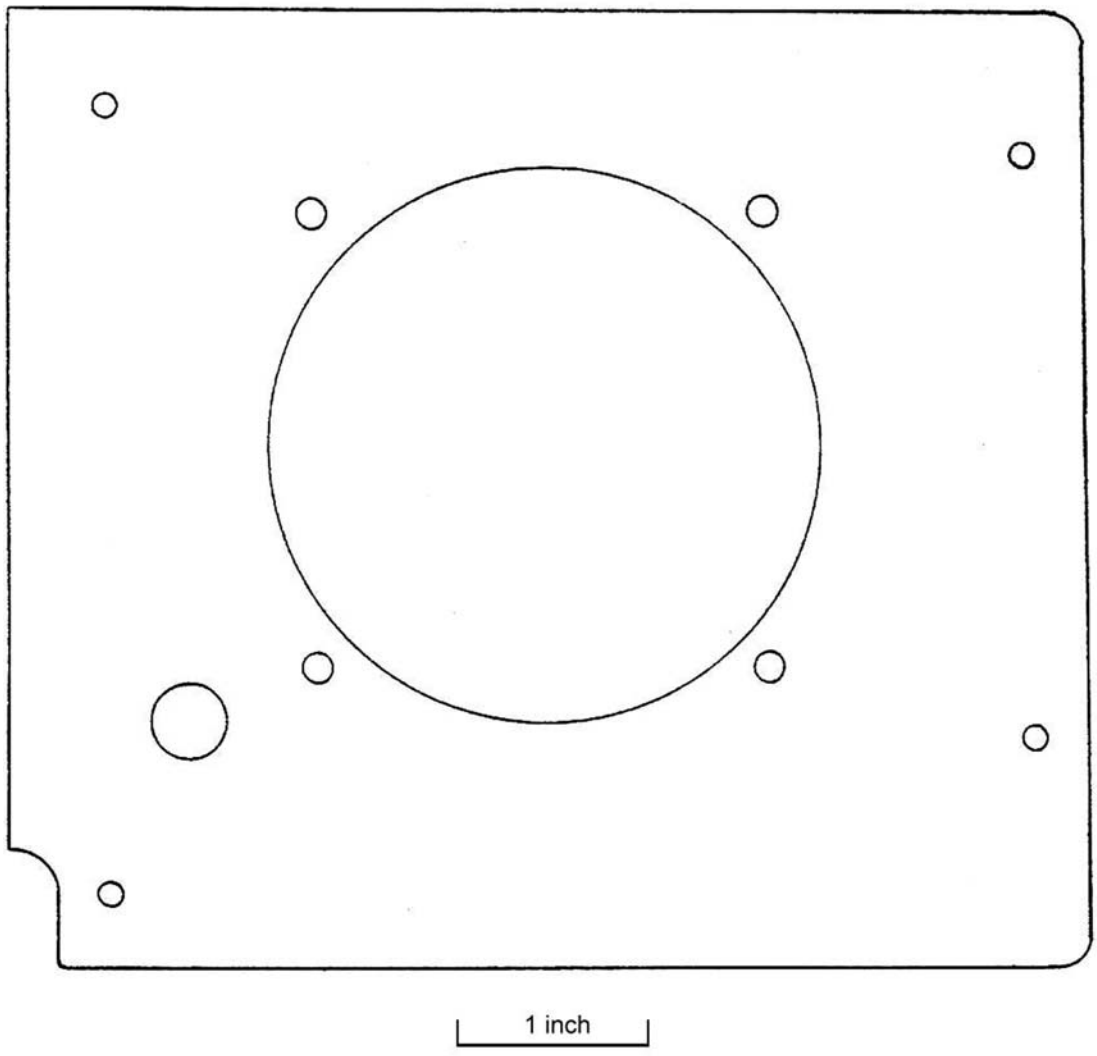


Fig. D. Socket - Template for aluminum plate, Plate (0.050 inch thick) to cover Template original fan cutout on back panel. This template is full-size when printed so that cutouts are round and 1-inch scale on drawing measures 1 inch on print.

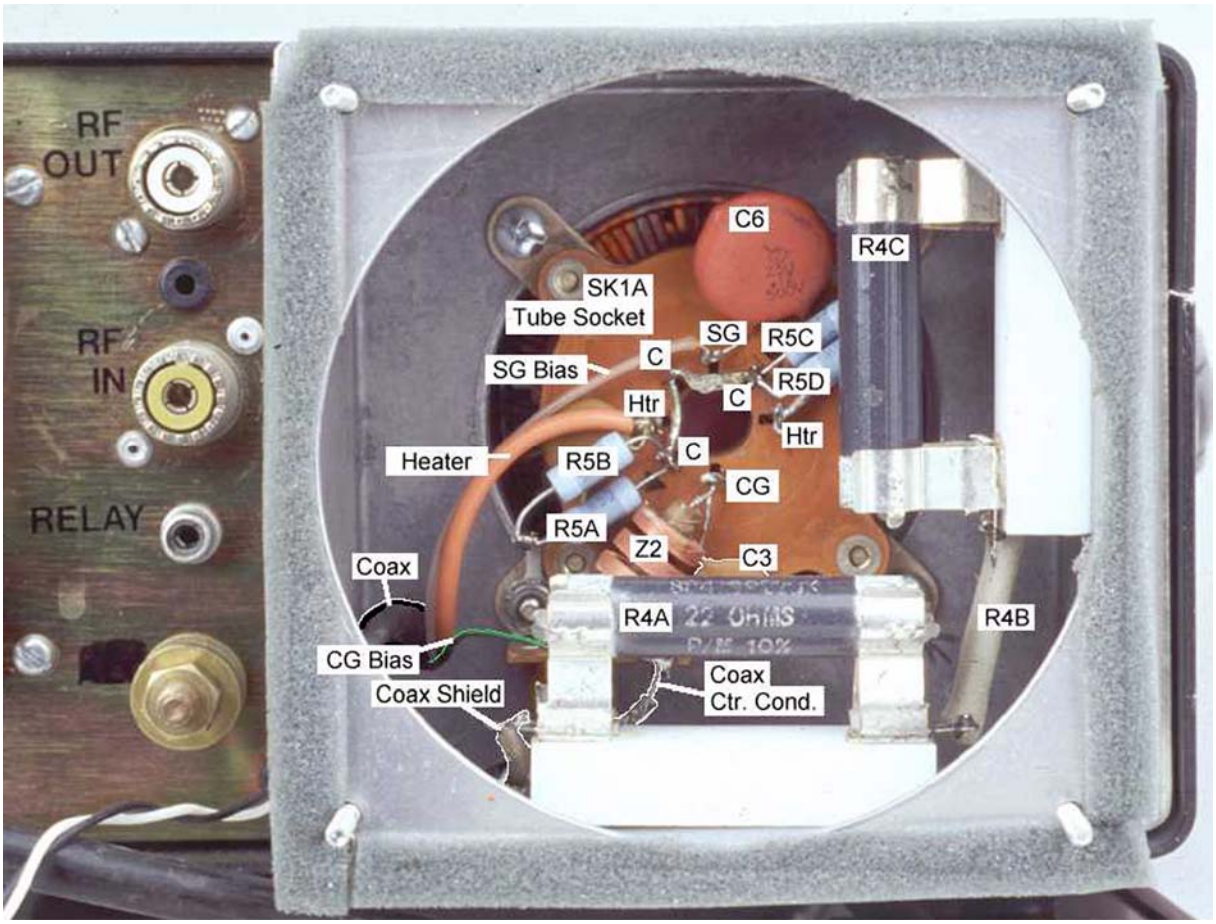


Fig. E. Socket - Socket pins and functions, R4 (A Assembly through C), RFC (Z2), coax grid lead connections, heater lead, screen-bias lead, R5 (A through D), C3 and C6

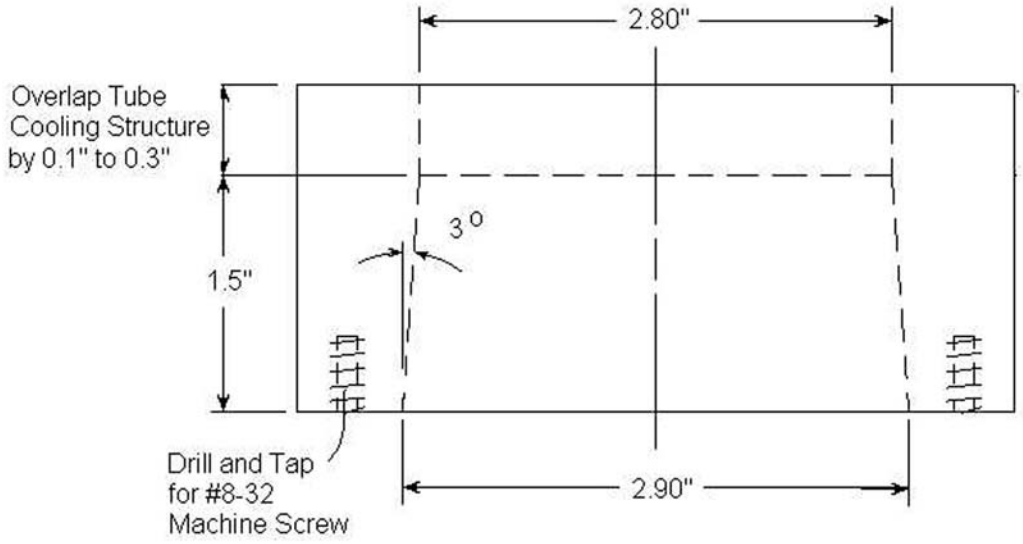


Figure F - Tube Chimney

Fig. F. - Tube Chimney, Elevation view of cooling chimney for 4CX800A tetrode. Make the chimney out of Teflon, Delrin, or nylon. Dimensions are in inches. Only those dimensions that are important for fit to the 4CX800A tube and the SK1A socket are given; choose other dimensions to suit.

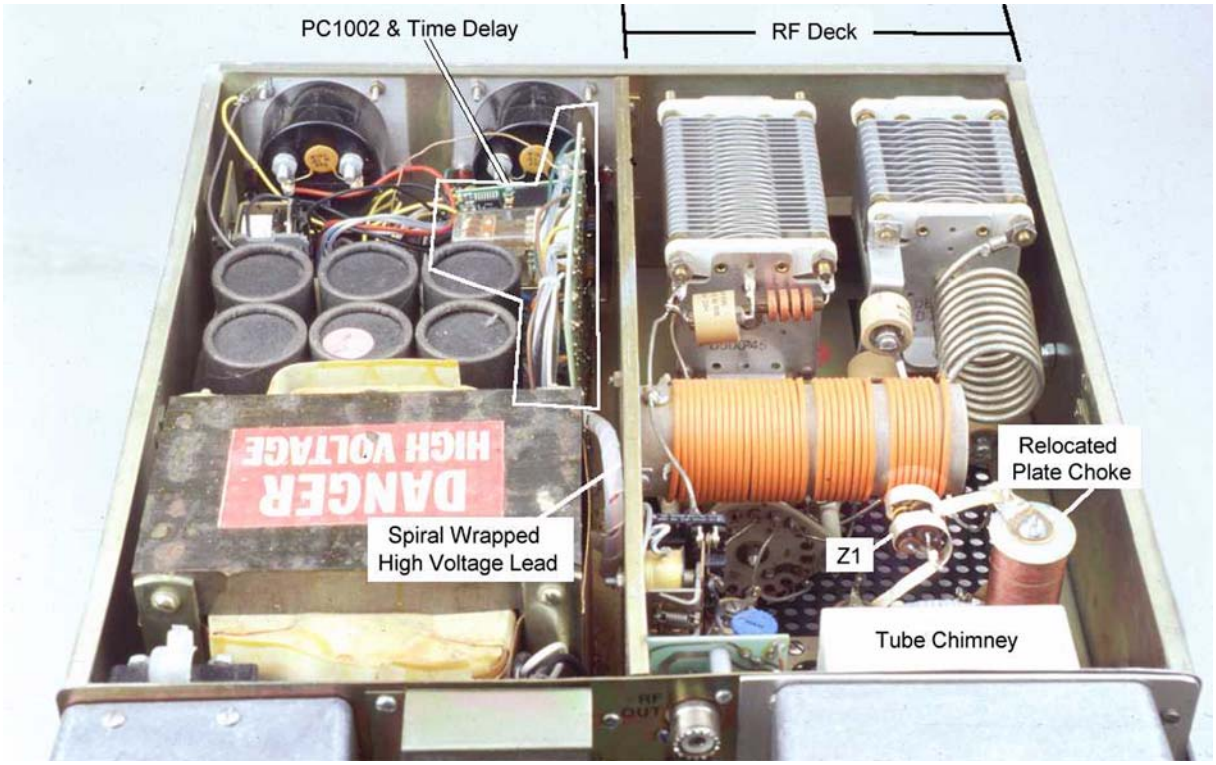


Fig. G. - Top Rear, RF deck with relocated plate choke, View tube chimney and parasitic suppressor, high-voltage and metering deck with spiral-wrapped HV lead, PC1002 and time delay.

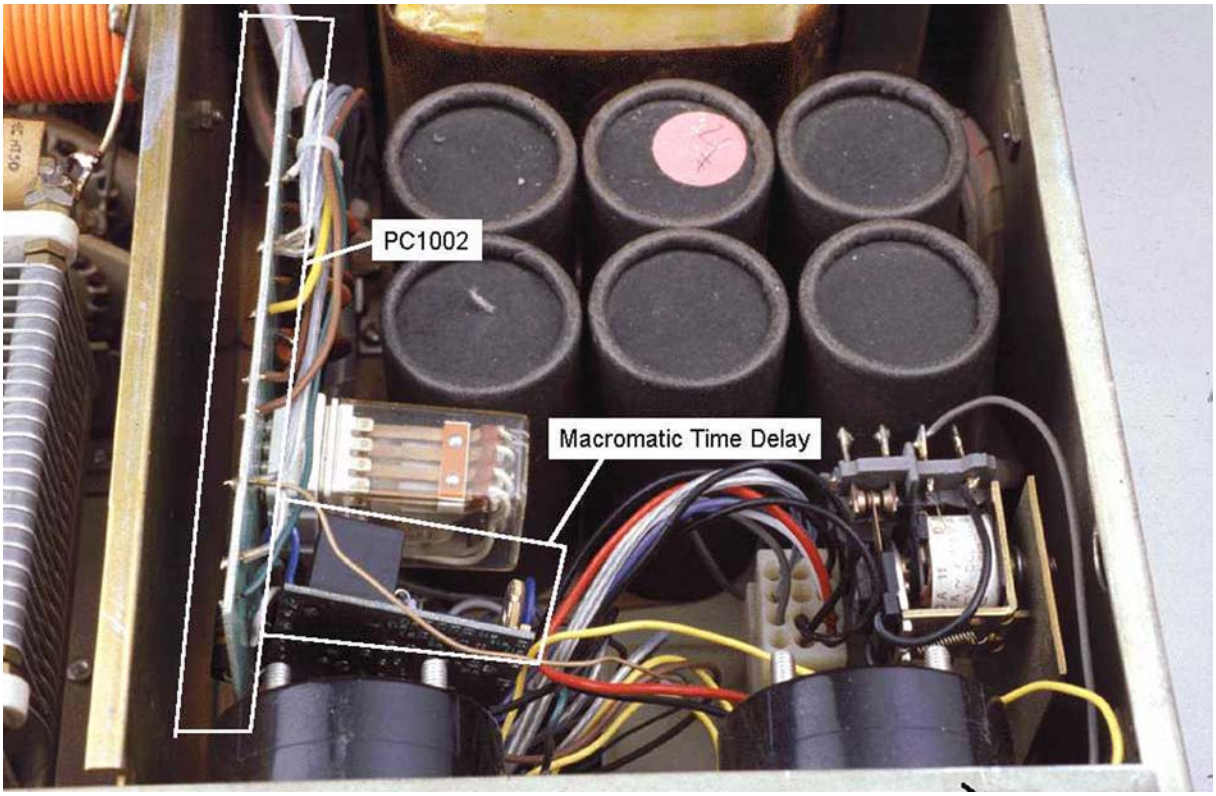


Fig. H. - Time Delay Macromatic time delay on PC1002 and PC1002

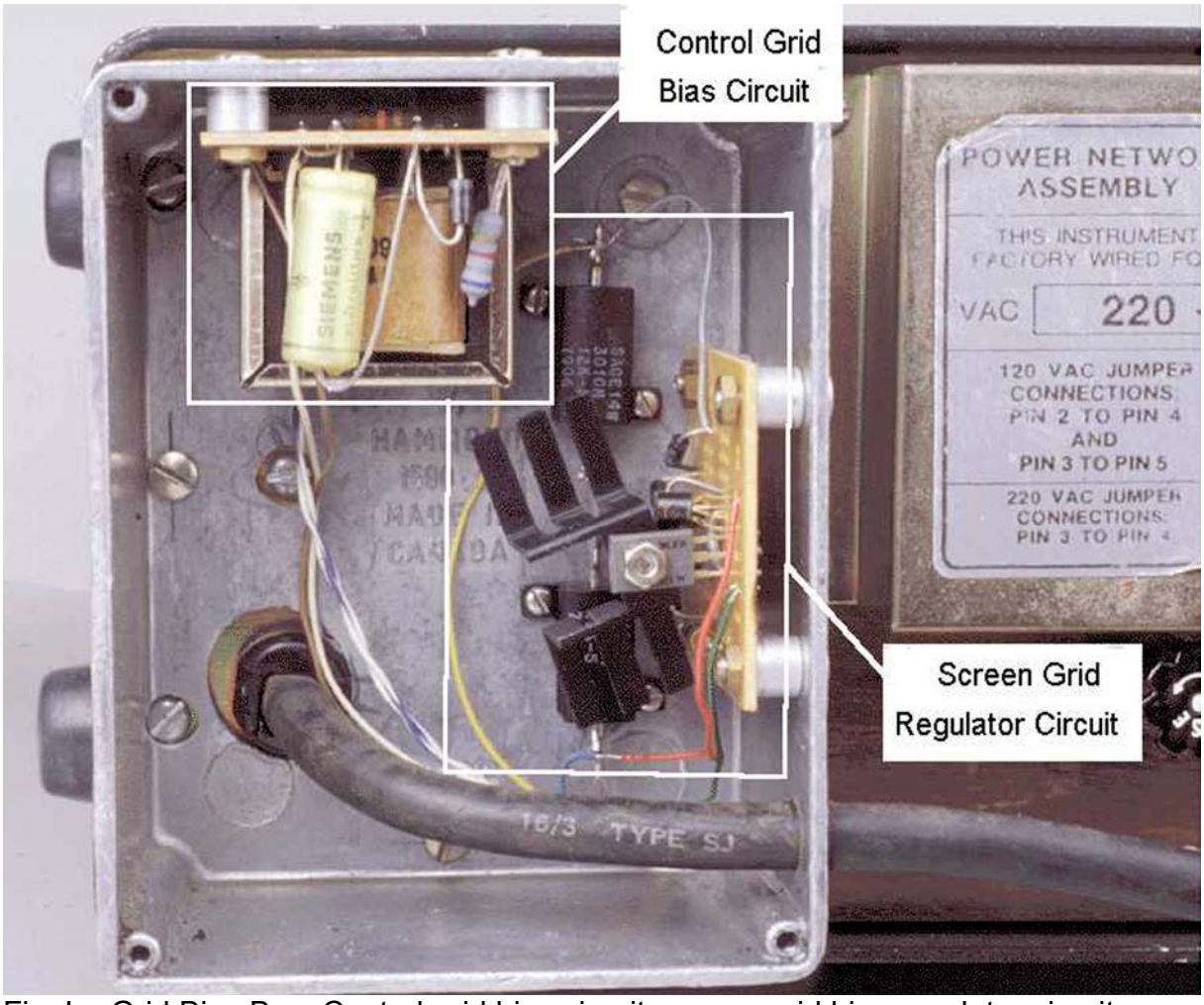


Fig. I. - Grid Bias Box, Control-grid bias circuit, screen-grid bias regulator circuit

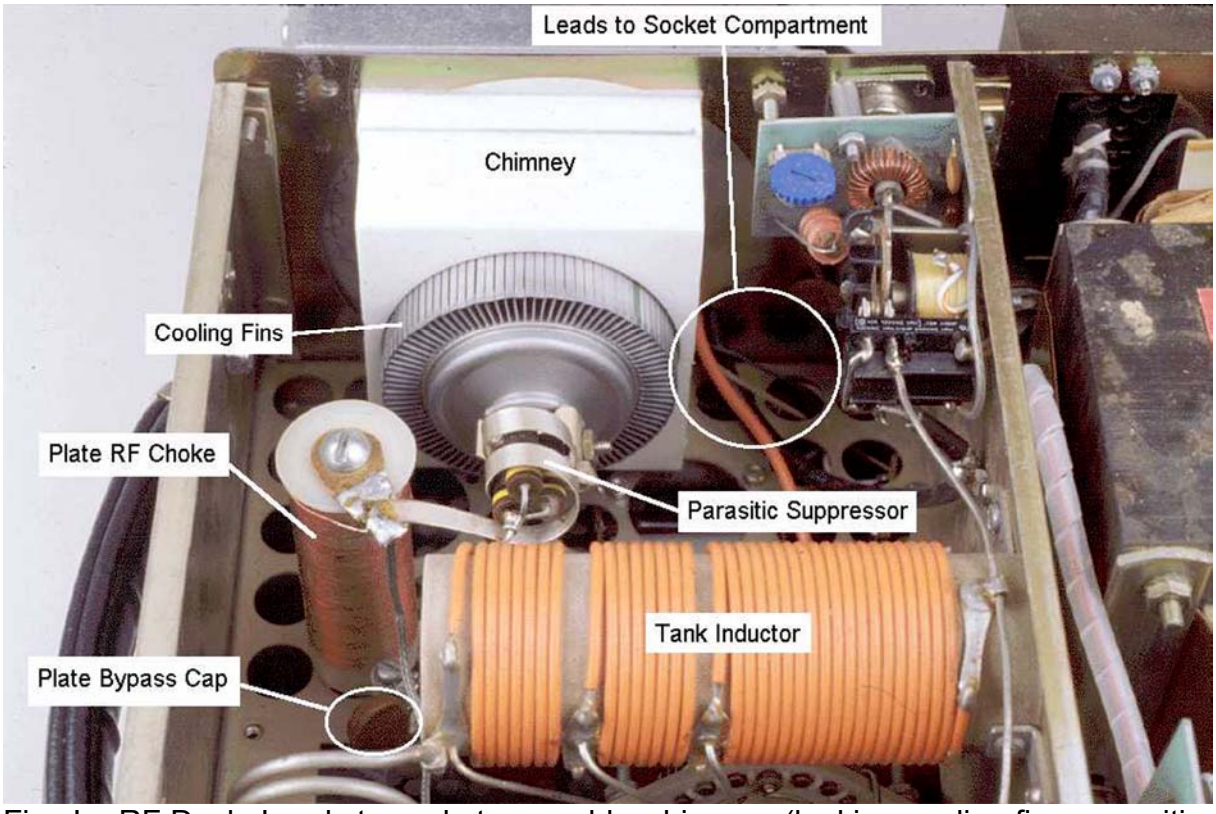


Fig. J. - RF Deck, Leads to socket assembly, chimney, (looking cooling fins, parasitic suppressor, rearward) relocated plate RF choke, plate bypass cap, tank inductor.

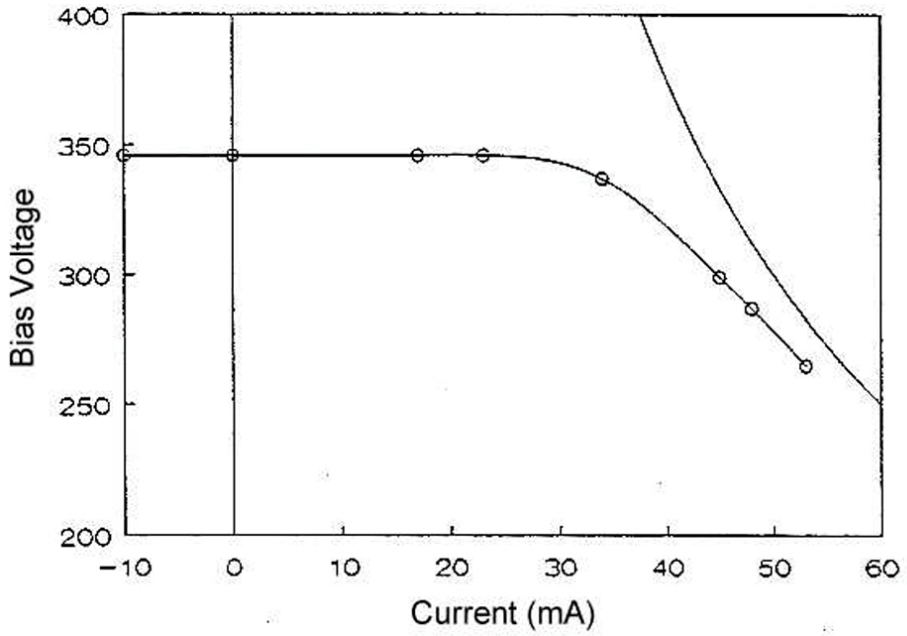


Fig. K. Screen-Grid, Plot of voltage-versus-current, Bias characteristics of the screen Character-supply. The hyperbola represents a caracteristics screen-grid dissipation of 15W, the maximum value allowable for the 4CX800A.

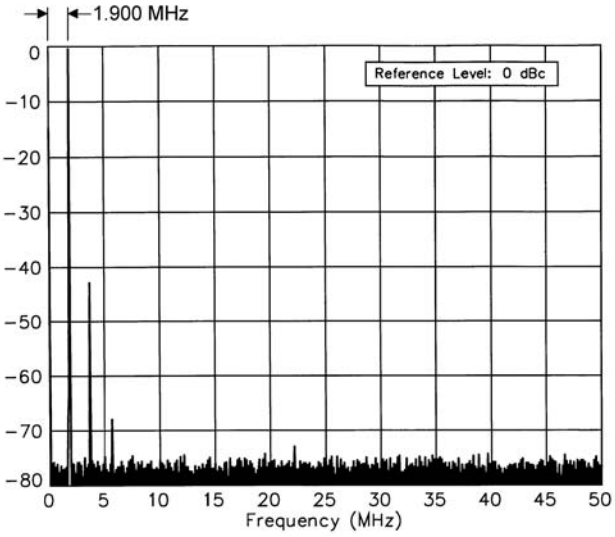


Figure L - 160 m Band Spurious Emissions

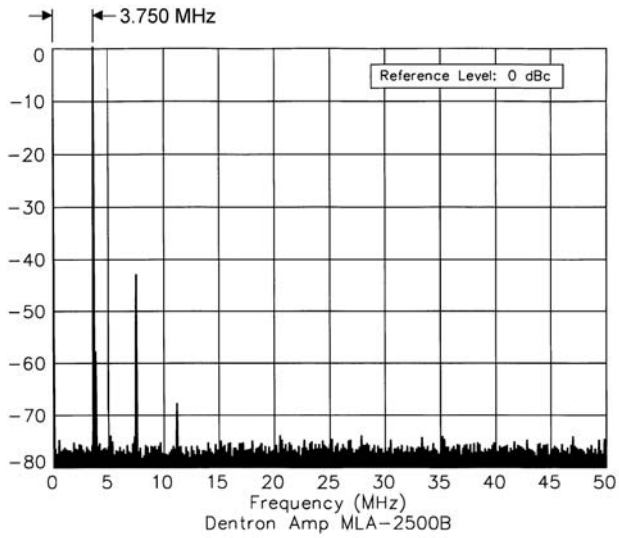


Figure M - 80 m Band Spurious Emissions

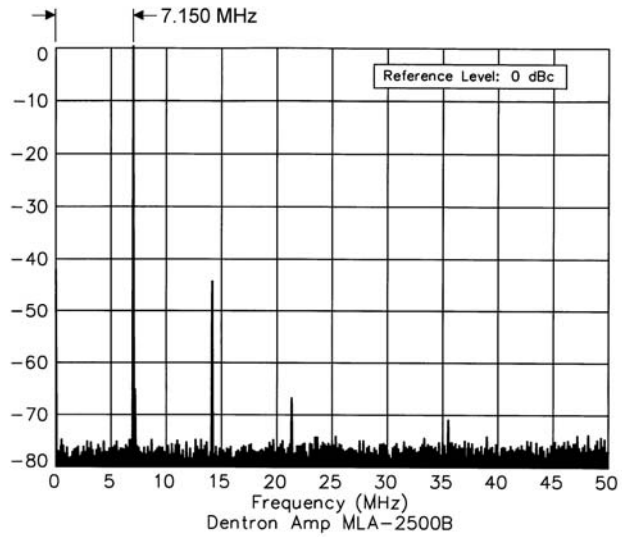


Figure N - 40 m Band Spurious Emissions

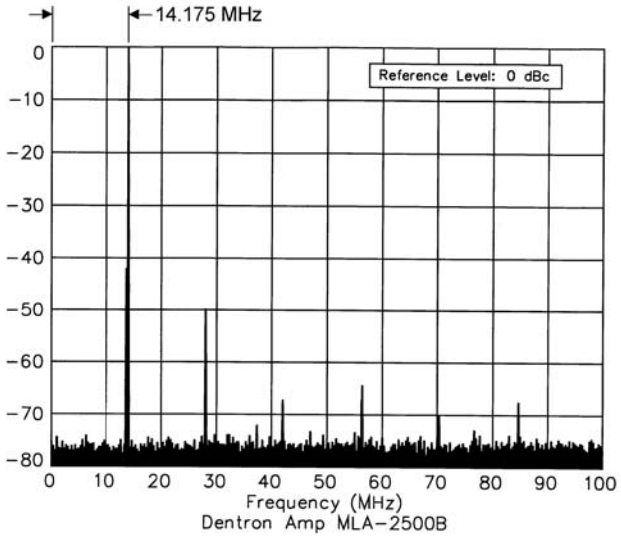


Figure O - 20 m Band Spurious Emissions

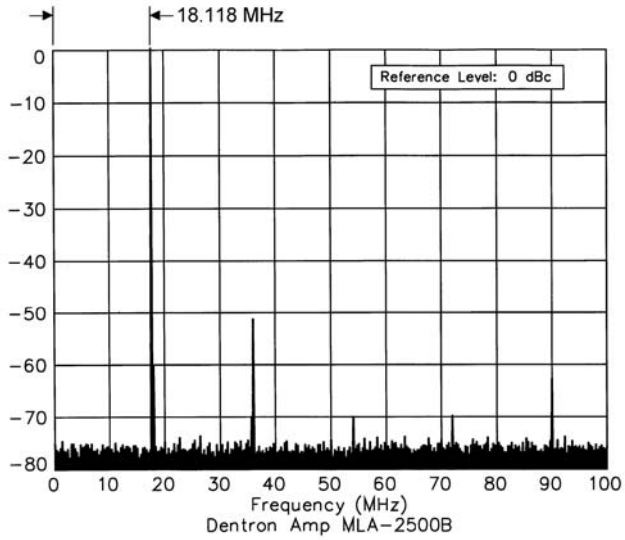


Figure P - 17 m Band Spurious Emissions

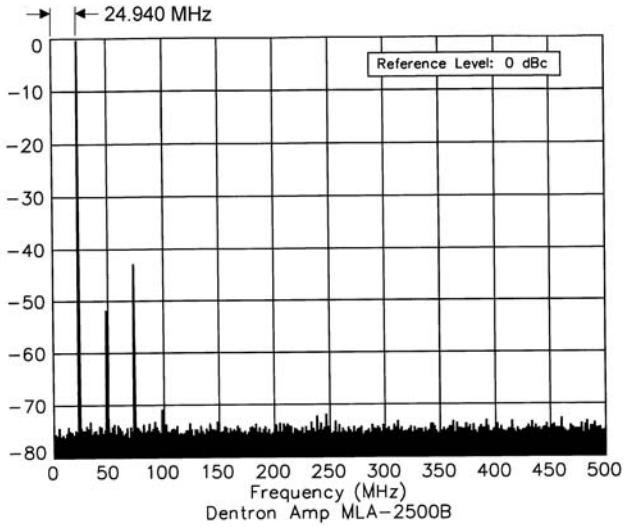
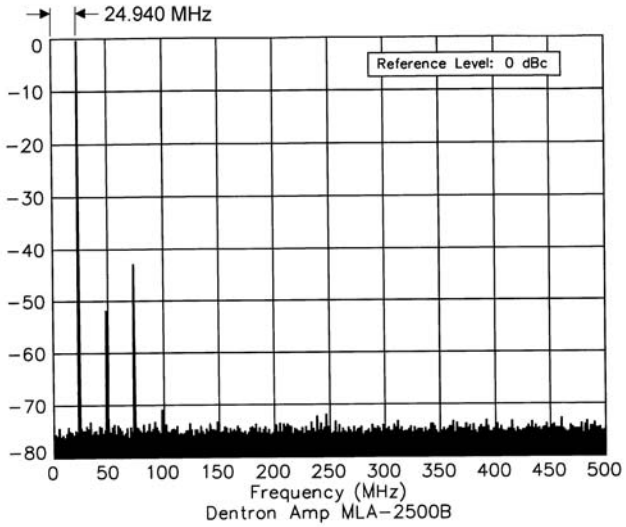


Figure Q - 12 m Band Spurious Emissions



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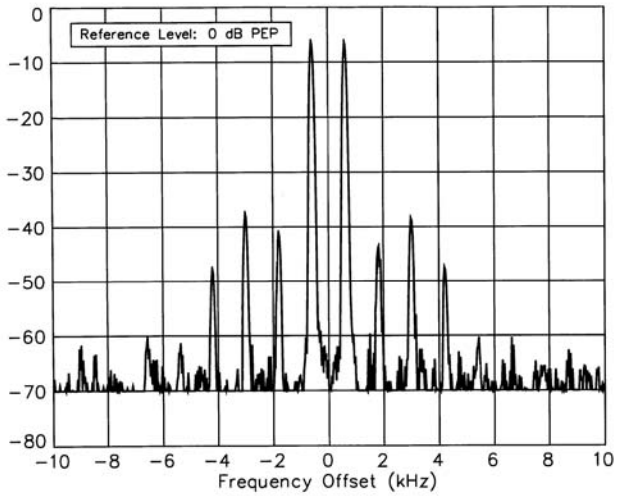

Figure S - Typical IMD Performance

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