

K2500R SMP-R2 Sampling Option Kit Installation Manual

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SMP-R2 Sampling Option Installation Kit

This document instructs Kurzweil service technicians in the installation of the SMP-R2 Sampling Option Kit. It is intended *only* for qualified Kurzweil service technicians. Installation by unqualified personnel will void the warranty.

Important Notices

Two 256K SIMMs is the minimum amount of sampling RAM required for the SMP-R2 Sampling Option to function. We recommend installing at least two one megabyte SIMMs as a starting point for the sampling RAM. SIMMs must always be installed in pairs; refer to the *K2500 Reference Guide* for information on SIMM requirements. You can install up to a maximum of 128 Megabytes of RAM. See the chart below for some typical sampling RAM configurations.

Maximum Sampling Time

		Sampling rate in KHz			
		29.4	32.0	44.1	48.0
2 x 1M	Mono	35 seconds	32 seconds	23 seconds	21 seconds
	Stereo	17 seconds	16 seconds	11 seconds	10 seconds
2 x 4M	Mono	140 seconds	128 seconds	92 seconds	84 seconds
	Stereo	70 seconds	64 seconds	46 seconds	42 seconds
2 x 16M	Mono	560 seconds	512 seconds	368 seconds	336 seconds
	Stereo	280 seconds	256 seconds	184 seconds	168 seconds

As always it is a good idea to be safe and back up the K2500R's RAM objects before opening it. This can be easily done by entering Disk Mode, pressing the Save soft button, and selecting the option "Everything" to save all RAM objects to a floppy or hard disk.

Tools and Materials Required For Installation

#1 Phillips screwdriver (small)

#2 Phillips screwdriver (medium)

Cables for diagnostics:

(2) Analog Audio Patch Cables - 1/4" mono phone plug to male XLR connector

(1) Digital loopback cable - XLR male to XLR female

(1) Optical cable - 36" or longer

Components of the SMP-R2 Sampling Option Kit

Item 1	SMP-R2 Sampling Option PCB Assembly
Item 2	Digital I/O PCB Assembly (smaller board with 2 XLR connectors & optical connector)
Item 3	Input/Output Monitoring Cable (4", 5-pin)
Item 4	Digital I/O Cable (15", 6-pin)
Item 5	Data Cable (9" ribbon)
Item 6	(4) (M3.0 x 10mm) Black Flat Head Screws
Item 7	(4) (M3.0 x 10mm) Black Pan Head Screws
Item 8	(2) Rubber Bumpers (one small & one large)
Item 9	Optical Out Cable (15", 3-pin)
Item 10	(2) Ribbon Cable Retaining Clips

Beginning The Installation

The installation procedure is divided into three parts: Disassembly, Installation, and Reassembly.

Disassembly

1. Unplug all external wires, cables and connectors from the K2500R and turn the unit so the front panel is facing you.
2. Using a #2 Phillips screwdriver, remove the four large truss head screws on the left and right sides of the unit.



WARNING: *The rear screws on each side of the K2500R are shorter than the other side screws. Make sure to keep these screws separate from the others so that you will use the shorter screws in the back side positions when you reassemble the unit. Using the longer screws in these positions could short out some of the components in the K2500R and damage the unit.*

Then, use a #1 Phillips screwdriver to remove the two small pan head screws located on the top edge of the rear panel.

3. See Figure 1. Lift the cover from the back, slide it off and place it aside. Notice that there is a groove on the top edge of the front panel that the top cover fits snugly into.

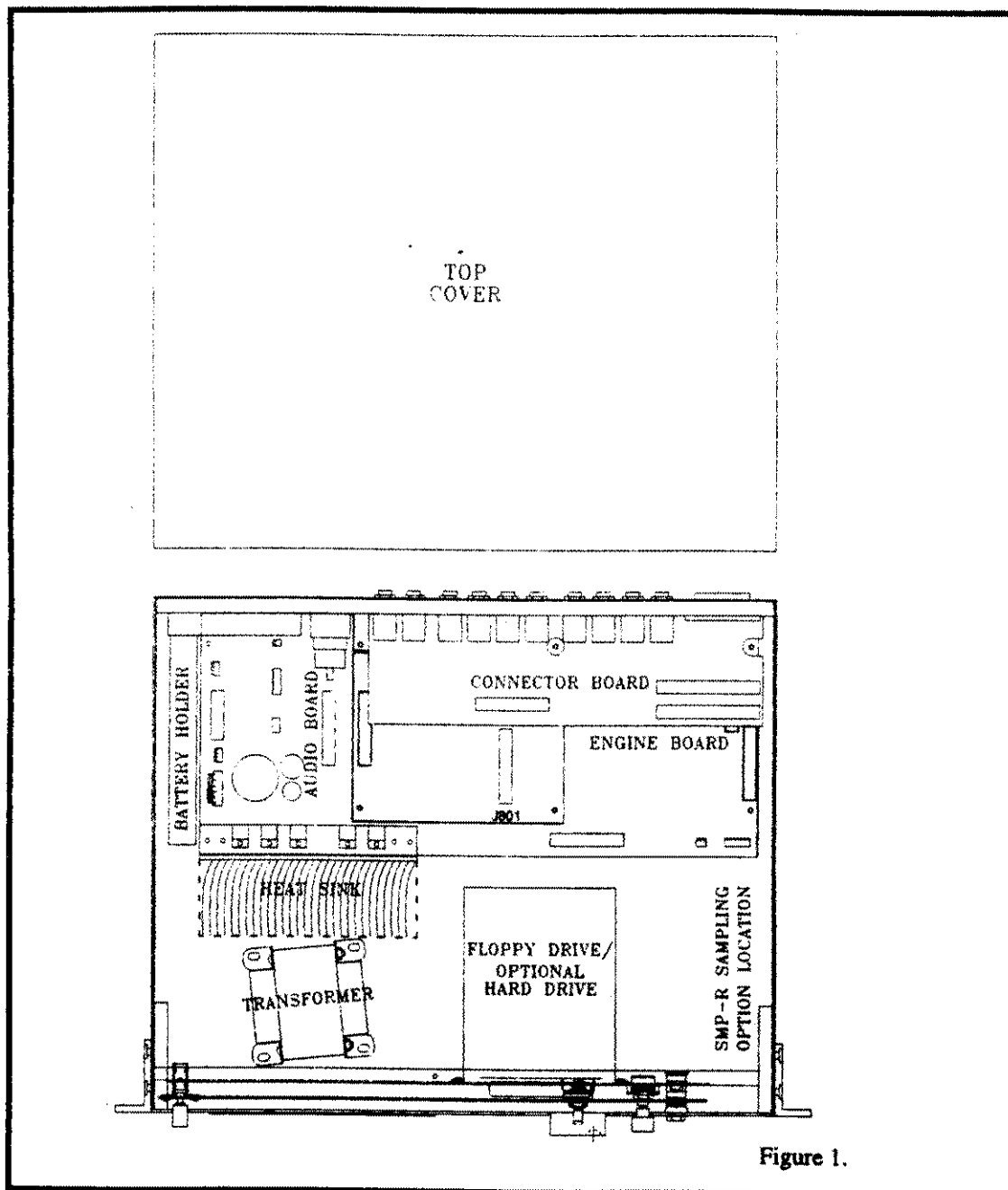


Figure 1.

Installation

1. See Figure 2. Remove the plate behind the front panel sampling option holes by removing the four screws shown in the figure. The plate should then fall in. Remove plate from inside of unit and discard it.

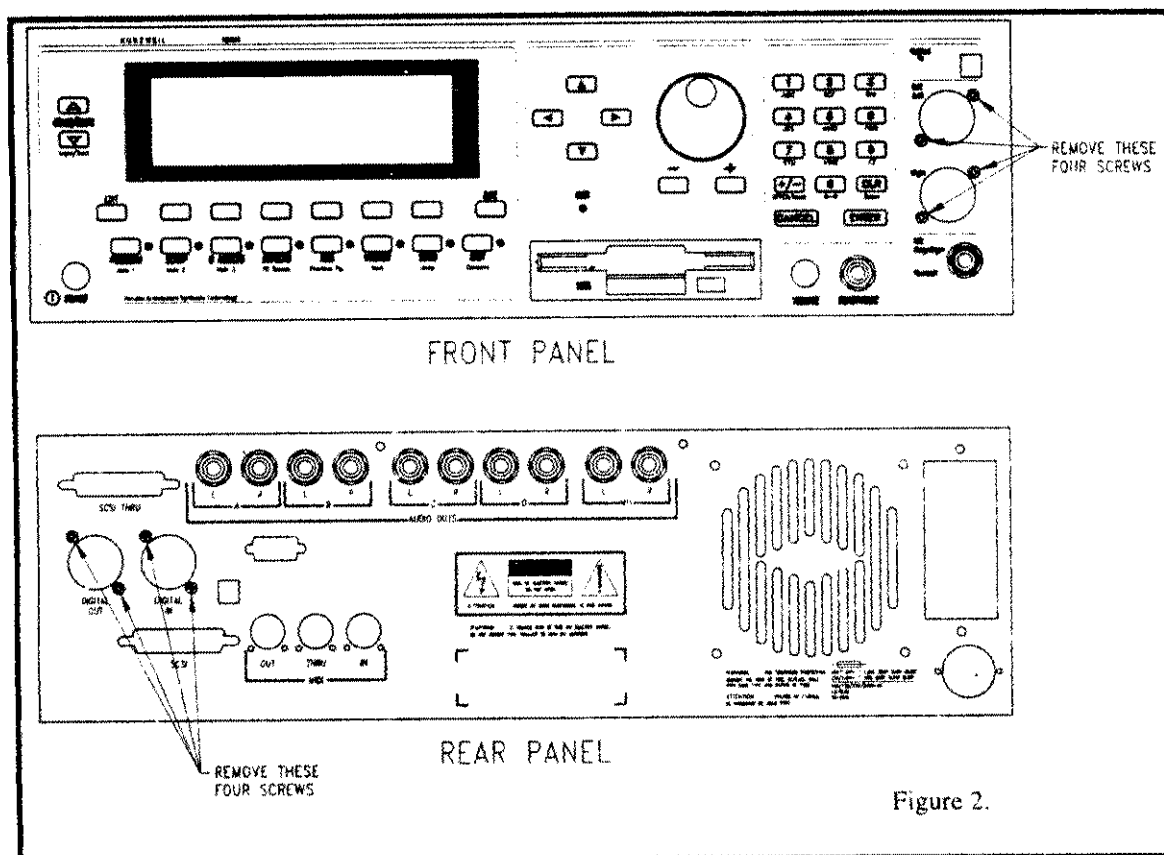


Figure 2.

2. See Figure 2. Remove the plate behind the rear panel Digital In and Digital Out holes by removing the four screws shown in the figure. The plate should then fall in. Remove plate from inside of unit and discard it.
3. See Figure 3. Plug one end of Item 4, the Digital I/O PCB Cable, into connector J1201 on Item 2, the Digital I/O PCB Assembly. The connectors on the cable are keyed so that they will only connect to the board one way; however, it does not matter which end of the cable you plug into the Digital I/O PCB Assembly.
4. See Figure 3. Plug one end of Item 9, the Optical Out Cable, into connector J1205 on Item 2, the I/O PCB Assembly. The connectors on the cable are keyed so that they will only connect to the board one way; however, it does not matter which end of the cable you plug into the Digital I/O PCB Assembly.

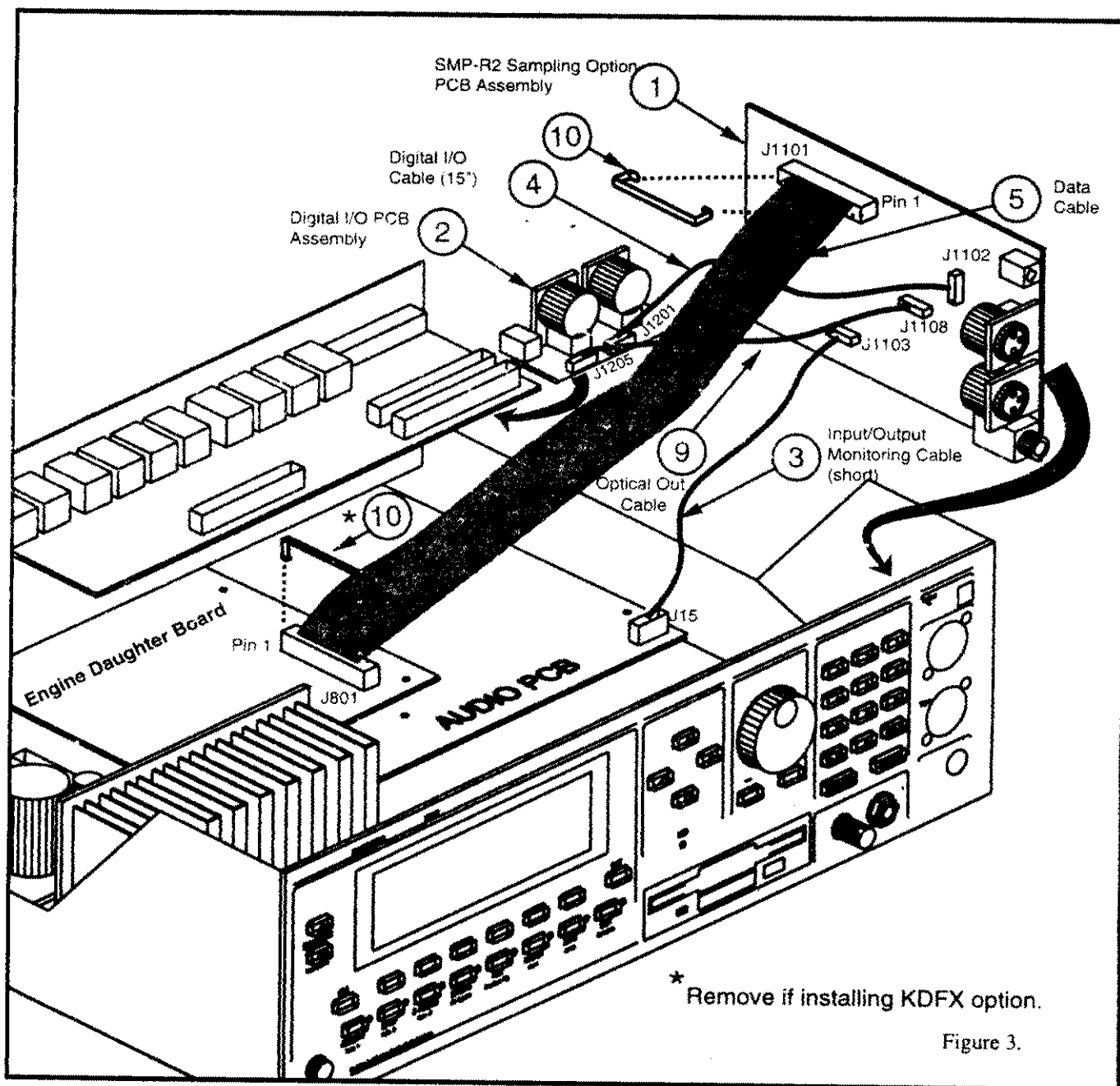


Figure 3.

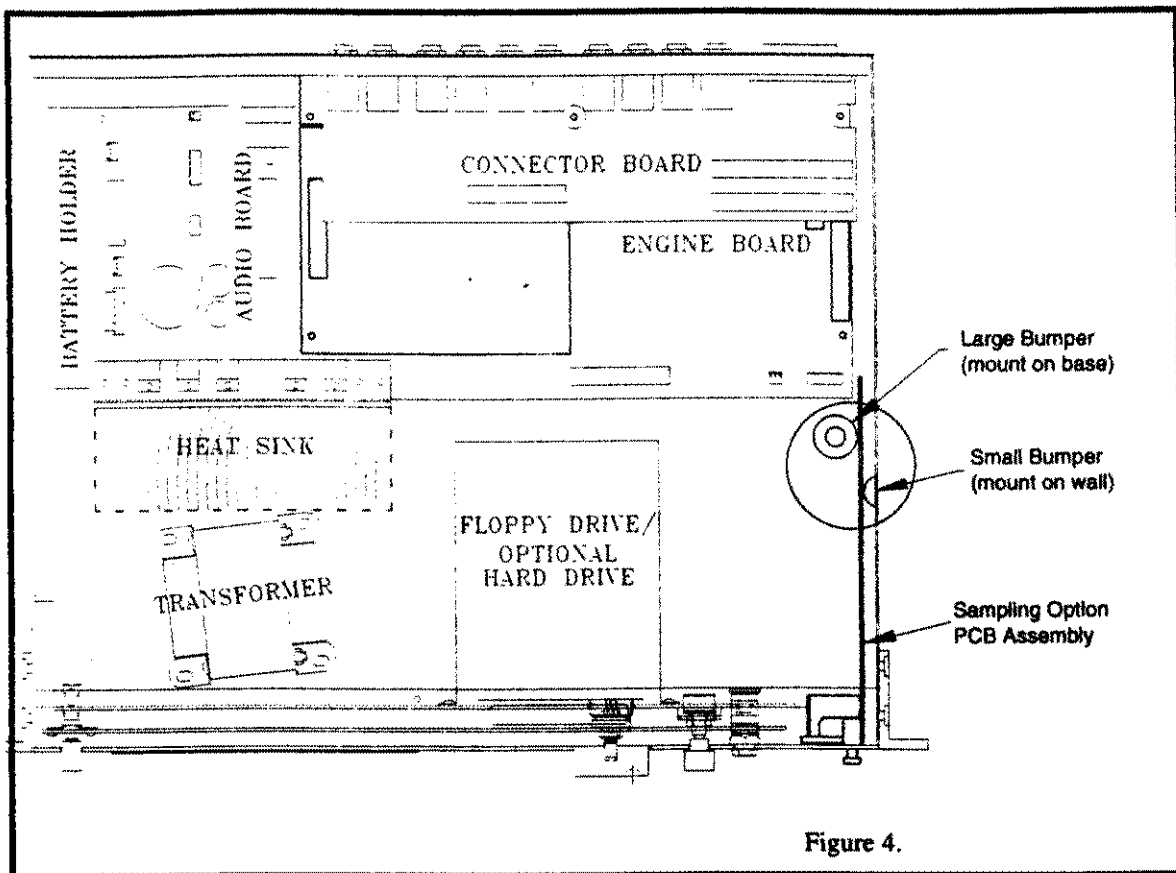
5. See Figure 3. Take Item 2, the Digital I/O PCB Assembly, remove and set aside the optical connector cap, then position the connectors in the holes in the rear panel of the K2500. Using the M3.0 x 10.0mm black pan head screws, Item 7, secure the Digital I/O PCB to the rear panel. Replace the optical connector cap after attaching the board.
6. Take Item 1, The SMP-R2 Sampling Option PCB Assembly, and remove the nut and washer from the 1/4" phone jack and the optical connector cap. Set them aside.
7. See Figure 3. Take Item 3, The Input/Output Monitoring Cable, and plug one end into connector J1103 on the SMP-R2 Sampling Option PCB Assembly near the back of the board down close to the Audio PCB. Then plug the other end into connector J15 on the Audio PCB, located in the front right-hand side of the Audio PCB.

8. Take the unconnected end of the Item 4, the Digital I/O PCB Cable, and plug it into connector J1102 on the SMP-R2 Sampling Option PCB Assembly, Item 3, directly behind the front panel connectors. Then take the unconnected end of the Item 9, the Optical Out Cable, and plug it into connector J1108 on the SMP-R2 Sampling Option PCB Assembly.
9. See Figure 4. Install Item 8, Rubber Bumpers, as shown. Stick the large bumper to the bottom of the enclosure near the back of the location for the SMP-R2 Sampling Option PCB Assembly, and the smaller bumper to the right side of the enclosure, about one inch from the bottom of the enclosure. **Note:** The purpose of the bumpers is to prevent the SMP-R2 Sampling Option PCB Assembly from moving freely within the unit.
10. See Figure 3. Take Item 1, The SMP-R2 Sampling Option PCB Assembly, and position the connectors through the front panel. Using the four M3.0 x 10.0mm black flat head screws, Item 6, secure the SMP-R2 Sampling Option PCB Assembly to the front panel. Be careful not to flex the board, as this could loosen its surface-mounted components.
11. Replace the optical connector cap and the washer and nut on the 1/4" phone jack.
12. See Figure 3. Take Item 5, the Data Ribbon Cable, and plug it into connector J1101 on the SMP-R2 Sampling Option PCB Assembly near the back of the board toward the top. Plug the other end into connector J801 on the Engine PCB, located near the front right-hand side of the Engine Daughter Board.



WARNING: *Be sure that red border on the ribbon cable, indicating pin one, is plugged into the pin one side of the connectors, indicated by a "1" on the silk screen of the PCB. Since pin one on the Sampling Option PCB Assembly is towards the front of the K2500, and pin one on the Engine Daughter Board is towards the back, the ribbon cable should have a half-twist in it as it goes from J1101 to J801. Serious damage can result if the cable is not plugged in correctly.*


After plugging in the Data Ribbon Cable, use the Ribbon Cable Retainer Clips, Item 10, to secure the cable to its connectors at each end.



The installation is now complete, and you can reassemble the unit.

Reassembly

1. Reassemble the unit by sliding the top cover back on, being sure that the front top edge of the cover goes into the groove on the top of the front panel.
2. Replace the four large truss head screws in the left and right sides of the unit and the two small pan head screws along the top edge of the rear panel.

 **WARNING:** *The rear screws on each side of the K2500R are shorter than the other side screws. Make sure to keep these screws separate from the others so that you will use the shorter screws in the back side positions when you reassemble the unit. Using the longer screws in these positions could short out some of the components in the K2500R and damage the unit.*

3. Run the Sampling Option diagnostic tests, as described in the following steps. You will require the following cables to run the diagnostics:
 - (2) Analog Audio Patch Cables - 1/4" mono phone plug to male XLR connector
 - (1) Digital loopback cable - XLR male to XLR female
 - (1) Optical cable - 36" or longer
4. Turn the volume on the K2500 all the way down. Then, remove all cables from your K2500R except the AC power cord and the cables that are specifically required for the diagnostics. The Sampling Option diagnostics generate high amplitude sounds which could harm you and your sound system. The test will also give you false fail results if all cables are not removed.
5. If the K2500R is on, press the Power button to turn it off, since you will need to restart the K2500 to start the diagnostic tests.

Start the K2500R by pressing the Power button to turn the unit on, pressing and releasing the Exit key while the "Please wait..." message is displayed. This will bring up the K2500R Boot Loader (as shown below), which lets you run diagnostics.

```
----- K2500 Boot Loader v1.01 -----  
  
Install System      Hard Reset  
Install Objects    Run Diags  
Run System         Fixed Diags
```



The Boot Loader's Menus resemble K2500R dialog boxes. They consist of a series of labels and a highlight bar that is used to select one of the labels. You can use the arrow keys to move the highlight bar up, down, right, and left. Press the OK soft button to invoke the highlighted menu option. Additionally, the data wheel and Enter key may be used to move the highlight bar and invoke the selected action.

6. Select "Run Diags" from the Boot Loader menu. Press any key to continue when the RAM erasure message appears.
7. Choose "SamplingOpt" from the Diagnostics menu.
8. Choose "Test complete sampling option"

You will be prompted to attach cables to the K2500R for the sampling option tests. When you see the prompt "Insert a pair of patch cables from audio output pair B to the balanced inputs of

the sampling option", attach one of the patch cables from the left B output (on the back panel of the K2500R) to the left XLR input on the front panel of the K2500R. Connect the other patch cable from the right B output to the right XLR input on the front panel of the K2500R. Press OK.

9. You will next be prompted to "Insert a coax digital-audio loopback cable". This cable has a female XLR connector at one end and a male XLR connector at the other. Connect this cable between the two XLR connectors (labeled "Digital In" and "Digital Out") on the back of the K2500R. Press OK to begin testing.
10. After some of the diagnostic tests have completed, you will be prompted to "Remove the coax digital-audio loopback cable, and insert an optical digital-audio loopback cable." At this time you should remove the cable connecting the two XLR connectors on the back of the K2500R. Then, connect an optical cable from the Optical In on the front of the K2500R to the Optical Out on the back of the K2500R. Press OK to resume testing.

When the diagnostic tests finish running, a message will appear telling you if the tests passed or failed. If any of the tests have failed, turn off power and review the installation procedure for any errors. When the diagnostics complete successfully, continue with the next step.

11. After completion of the diagnostic check, power down and up again, going into normal operation. Press the "MASTER" button followed by the "Sample" soft button. You should now be on the sampling page. Insert a stereo analog source into the 1/4 inch jack on the front panel of the option board. This could be from a CD or tape player. Select "Input :Analog" with the Alpha Wheel, set "Src:" to "Ext", then Select "GAIN" and adjust the Alpha Wheel until the Level Meters indicate a signal with no "CLIP" indication (The Master LED will also flash when clipping occurs).

Insert headphones into the K2500R headphone jack or playback equipment into the "MIX" outs. Turn the volume up to a useful level. Source material should go on and off when "MON" is changed from "On" to "Off" with the Alpha Wheel. Make sure that right/left channel input is coming out of the right/left channel output and that the signal is not distorted. If channels are reversed, missing, or distorted, check the cable connections to the Audio, Engine, and SMP-R2 Boards.

This completes the testing of the SMP-R2 Sampling Option.