

MODULE 04 FIELD EXERCISE

Salvage an Audio Amplifier

TASK: Salvage one discarded audio amplifier or receiver end to end: scout your area, source one legal donor, tear it down by the eight rules, read what it documents about itself, and test the parts you pull.

CONDITION: Given your own area and legal pulls only; the Unit 03 tool kit and the Module 02 multimeter; a 100 ohm resistor and a pair of insulated pliers for the discharge drill; and a phone with an internet connection.

STANDARD: At least three venues surveyed and logged with hours and likely yield; one amplifier or receiver sourced from a legal channel and its exposure noted; the case opened by the eight rules and photographed before the parts scramble, with the large filter capacitors bled through the resistor drill and read down to a couple of volts or less on the meter before your hands go near the board; one part named through the unit's own documentation, by an FCC-ID lookup or a service manual; the high-value pulls tested by Unit 06's methods and labeled with donor and test, the keepers boxed and the dead set aside; and the whole run photographed for your log.

SAFETY FIRST

The large filter capacitors in an amplifier hold a charge, and hold it for days after the unit was last powered. Before your hands go near the board, bleed each one through a 100 ohm resistor held in the teeth of insulated pliers, then read it on the meter's highest DC range and confirm it has settled to a couple of volts or less. Never short a capacitor across its terminals with a screwdriver. A vintage tube (valve) amplifier holds a far higher charge, up to 700 volts DC: treat one with extra care or leave it. Cut the mains cord and bend the prongs before you open a corded unit, and never work on it plugged in. Take off rings, watches, and necklaces before you reach inside. Wash your hands when you finish, and do not eat or drink while you work.

Task 1 · Survey the venues

1. Map where audio gear turns up before you go. List at least three real venues you can reach: thrift-store electronics shelves and outlet bins, curbs on collection night, e-waste recyclers, and give-and-ask networks where people offload old stereos after they cut the cord.
2. For each venue, write its hours or its rhythm and what it is most likely to yield: a thrift shelf carries integrated amplifiers and receivers; a curb fills the night before collection; an office or campus cleanout can give up a rack of gear at once.
3. Reconnoiter one venue by day and again near the hour you would actually go. Note one site hazard and your way out before you commit to it.

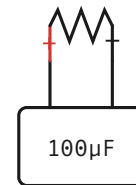
Task 2 · Source and open the amplifier

1. Source one discarded audio amplifier or receiver: an integrated amplifier, a stereo or AV receiver, or a powered subwoofer. A solid-state unit is the ordinary find and the safe first get; leave a vintage tube amplifier for later.
2. Cut the mains cord and bend the prongs so the unit can never be plugged in again.
3. Photograph the inside while the parts are still in place, then open the case by the eight rules: eyes protected, pry away from you, no forcing, and the rotary tool only for a case you have chosen to open.

Task 3 · Discharge the filter capacitors

1. Find the large cylindrical electrolytic capacitors near the transformer. These are the filter capacitors, and they hold the charge.
2. Bend the legs of a 100 ohm resistor to span a capacitor's two terminals. Hold the resistor by its body in the teeth of a pair of pliers, gripping the insulated handles, and press a leg to each terminal for a few seconds, so the charge drains through the resistor instead of across an arc.
3. Set the meter to its highest DC voltage range, read across the terminals, and confirm the capacitor has settled to a couple of volts or less. Do this for every large capacitor before your hands go near the board.

100Ω resistor in pliers



Task 4 · Read the documentation

1. Find the unit's model number, and, if it has a tuner or Bluetooth, its FCC ID on the rear label.
2. Type the FCC ID into the FCC Equipment Authorization Search, or a mirror, for the internal photos and the layout; and search the model number with the words service manual for the schematic and parts list that hi-fi gear so often has.
3. Use the documentation to name one part on the board before you pull it.

Task 5 · Test the high-value pulls

1. Transformer. On resistance, each winding reads low but not zero, the primary higher than the secondary; primary to secondary reads open. Any continuity between primary and secondary is a short, so scrap it.
2. Filter capacitors. Already discharged, read each on a capacitance range against its printed value; a bulging or vented top is a reject.
3. Power transistors and MOSFETs on the heat sinks. On diode test, a bipolar transistor reads a forward drop of about 0.5 to 0.8 volts from the base to each other leg; a MOSFET's body diode reads a drop one way and OL the other. Open both ways, or a dead short, condemns the part.
4. Bridge rectifier. Test its four diodes the same way: a forward drop one way, OL the other.
5. Relays. The coil reads a definite resistance; energize it from a bench supply and a good contact flips from open to closed on continuity.

Task 6 · Label, box, and log

1. Label every keeper with its donor and its test result. Box the good parts, and set the dead ones aside.
2. Keep the heat sinks: they are worth having for any power build.
3. Photograph the sourced unit, the opened case, and the boxed parts for your log. Note anything you refused and why.

Task 7 · Field notes

Log the venues you surveyed and their hours, the unit you sourced and where, the filter-capacitor voltages you read down before touching the board, the part you named from the documentation, and the test result for each pull. Note anything you refused and why.

#	Task	Meter Setting	Expected	Your Reading	Pass / Fail
1	Venues surveyed	Log	3+ venues hours + yield each		
2	Teardown	Photo + open	cord cut, prongs bent inside photographed		
3	Caps discharged	DC Volts	each large cap read to ~2 V or less		
4	Documentation	Look up	FCC ID or manual one part named		
5	Pulls tested	Ohm / diode	transformer, caps, transistors, relays		
6	Box + log	Record	keepers labeled, boxed run photographed		