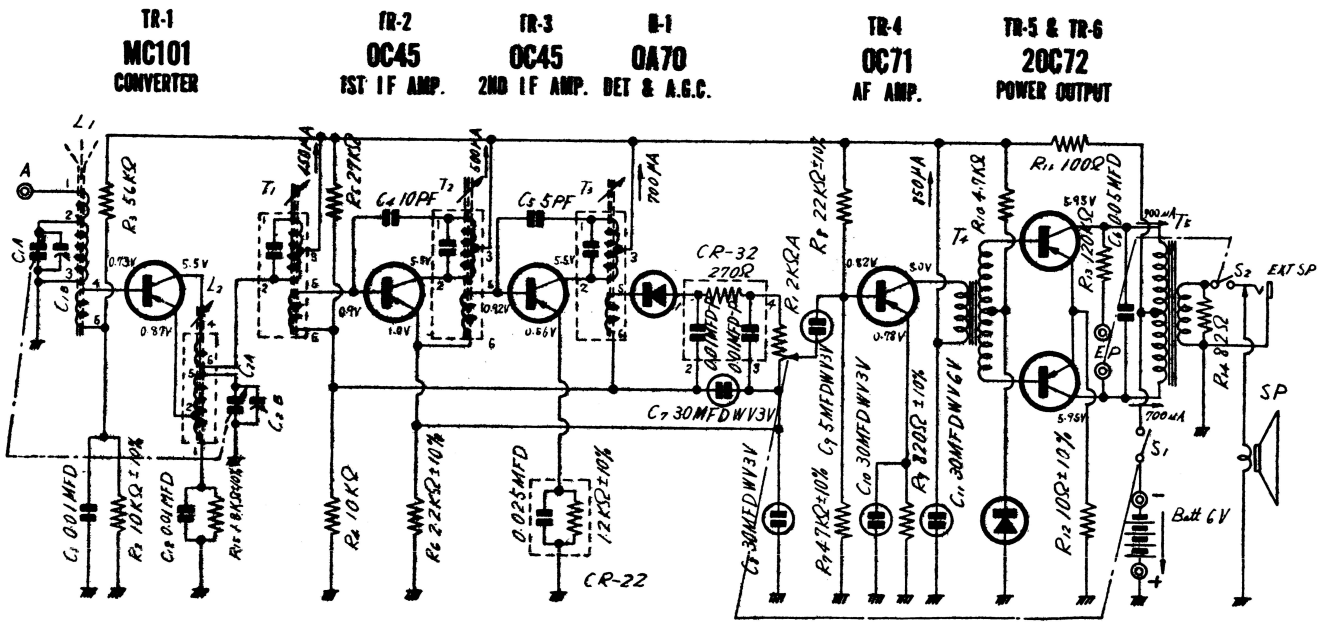
SCHEMATIC DIAGRAM

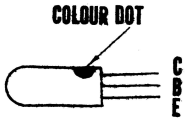


L1
FERRITE ROD ANTENNA COIL

L2
OSC. COIL

T1 T2 T3
IF TRANS.
(BOTTOM VIEW)

COUPLED CAPACITORS & RESISTOR

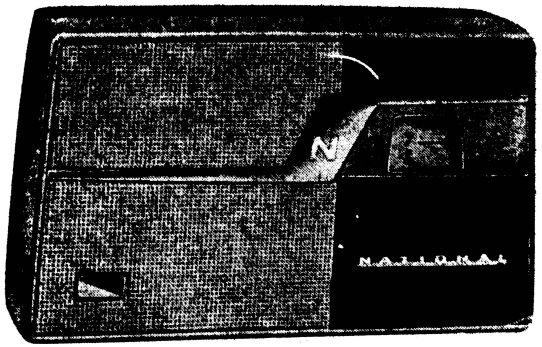


TRANSISTOR

D-2
MA23
A.O.C.

Notes:

1. Measurements of voltage and current should be made at minimum volume and at no signal.
2. Voltages indicated in the schematic diagram are given as standard values measured by Vacuum-tube Volt Meter. When 1 KΩ / 1 V Tester is used for voltage measurement, please note that you will get lower values (−0.1 V on Collector, −0.2 V on Base and −0.1 V on Emitter respectively) than the abovementioned standard values obtained by Vacuum-tube Volt Meter.
3. Please make your current measurement within the range of 1 mA. Collector current of both transistors TR-1 (I_{c1}) and TR-2 (I_{c2}) are to be measured at the points, as illustrated on the printed circuit board removing solder on them.
   Those of other transistors can be measured by means of cutting the printed copper on the board.
4. Values of resistors R_8 (56KΩ), R_9 (27KΩ) and R_{10} (4.7KΩ) given in the schematic diagram may be variable according to radio receivers.



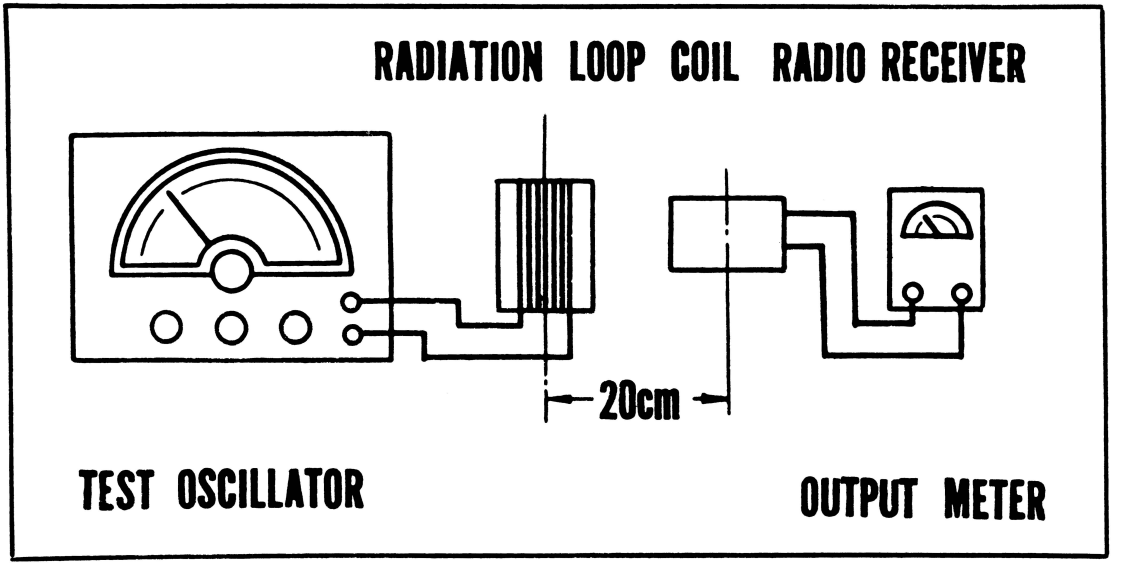
SPECIFICATIONS

Frequency Range:	540～1600 Kc/s (556～187.5 m)
Intermediate Frequency:	455 Kc/s
Sensitivity:	250 μV / m / 10 mW
Power Output:	150 mW undistorted 200 mW maximum
Batteries:	Four No. 3 Penlight Cells, 6V (NATIONAL UM-3 or equivalents)
Speaker:	2½″ PM dynamic speaker Voice coil impedance 10Ω

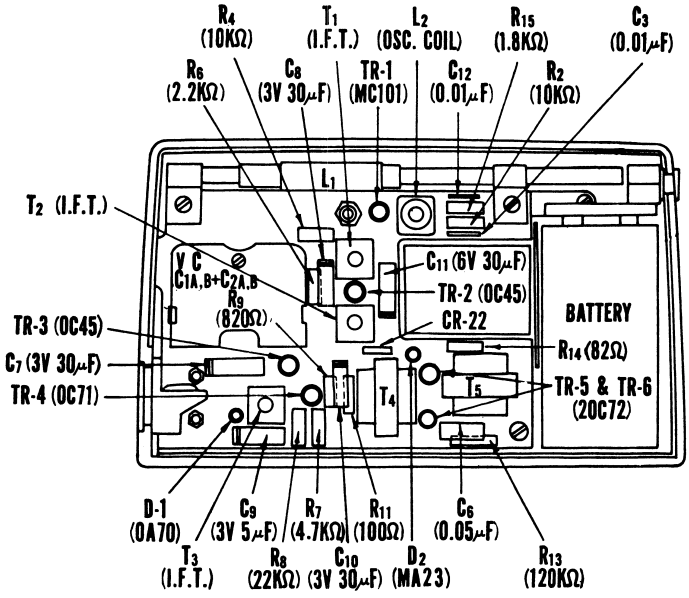
NATIONAL MODEL AB-110

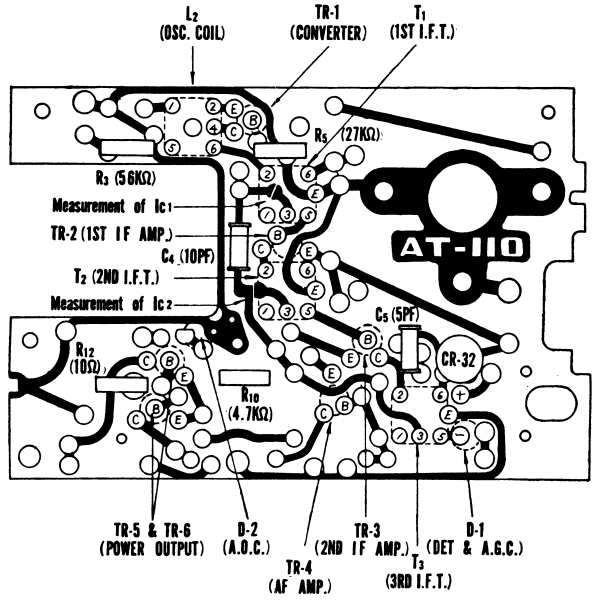
Step	Test Oscillator output	Dial setting	Adjusting to maximum output
1	455 KC		I F transformers (T_3, T_4, T_5)
2	455 KC	Variable capacitor at maximum capacity	Repeat step ①.
3	530 KC		Oscillator coil (T_2)
4	1650 KC	Variable capacitor at minimum capacity	Oscillator trimmer (C_2B)
5	530 KC or 1650 KC	Variable capacitor at max. or min. capacity	Repeat steps ③ and ④.
6	600 KC	600 KC	Antenna coil (T_1)
7	1200 KC	1200 KC	Antenna trimmer (C_1B)
8	600 KC or 1200 KC	600 KC or 1200 KC	Repeat steps ⑥ and ⑦.

Connection of Test Oscillator, Radiation Loop Coil, Radio Receiver and Output Meter.



MAIN PARTS LOCATION & PRINTED CIRCUIT BOARD





ALIGNMENT PROCEDURE

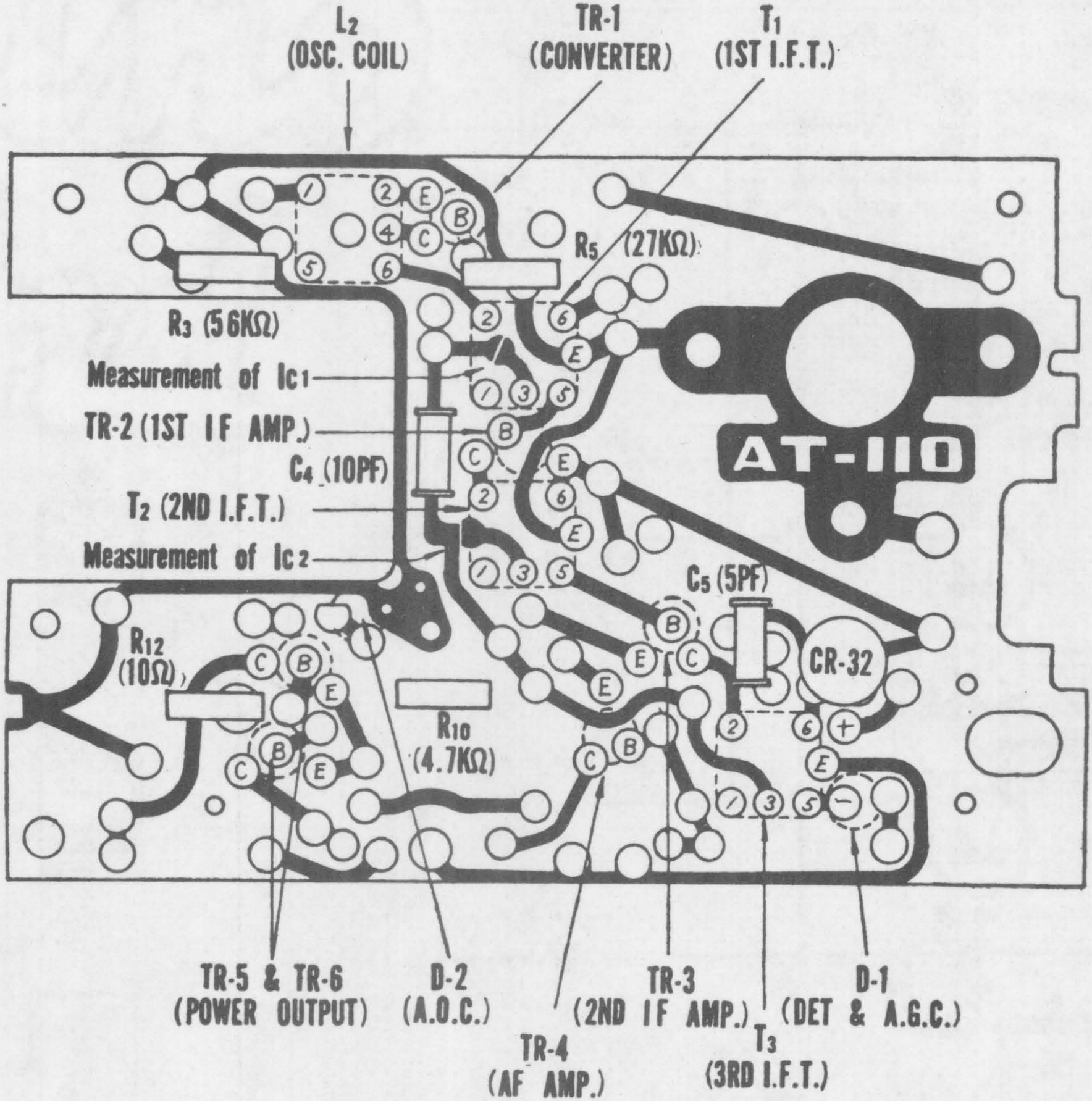
OUTPUT METER ..... Connect Output Meter across speaker voice coil.

OUTPUT LEVEL ..... Attenuate Test Oscillator output always maintain 0.4 volt on Output Meter to prevent overloading of the receiver.

TEST OSCILLATOR ..... Modulate Test Oscillator at 1000c/s and connect the lead wires of Test Oscillator output to Radiation Loop Coil.

RADIO RECEIVER..... Place the radio receiver 20cm away from Radiation Loop Coil and set volume control to maximum.

RADIATION LOOP COIL... Make up a 20 turn, 15cm diameter bobbin, using 1mm copper wire.


L2
(OSC. COIL)
TR-1
(CONVERTER)
T1
(1ST I.F.T.)
R5 (27KΩ)
R3 (56KΩ)
Measurement of Ic1
TR-2 (1ST IF AMP.)
C4 (10PF)
T2 (2ND I.F.T.)
Measurement of Ic2
AT-110
C5 (5PF)
CR-32
R12
(10Ω)
R10
(4.7KΩ)
TR-5 & TR-6
(POWER OUTPUT)
D-2
(A.O.C.)
TR-4
(AF AMP.)
TR-3
(2ND IF AMP.)
T3
(3RD I.F.T.)
D-1
(DET & A.G.C.)