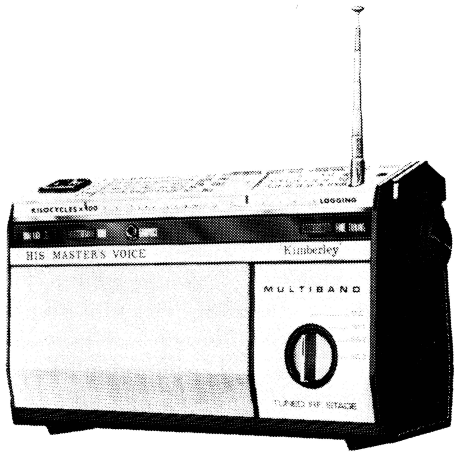
SERVICE MANUAL

PORTABLE 4-BAND RADIO . . . MODEL XI-IK

"HIS MASTER'S VOICE"

MANUFACTURED & DISTRIBUTED BY
E.M.I. (AUSTRALIA) LIMITED
(INCORPORATED IN N.S.W.)

6 PARRAMATTA ROAD
HOMEBUSH, N.S.W.



SPECIFICATION

FREQUENCY RANGES:

M.W.	—	525 - 1620		kHz.
SW1	—	1.6 - 4.8		MHz.
SW2	—	4.6 - 14		MHz.
SW3	—	14 - 30		MHz.

INTERMEDIATE FREQUENCY:
455 kHz.

BATTERY:
One Eveready Type 276-P (9V.)

BATTERY CONSUMPTION:
Zero Audio Output—Approximately 11 mA.

LOUDSPEAKER:
7" x 4" Permanent Magnet.

V/C impedance at 400 Hz — 15 ohms.
Undistorted power output — 500 mW approx.

SEMI-CONDUCTORS:

BF115	(Silicon NPN)—R.F. Amplifier	
2N3646	(Silicon NPN)—Oscillator	
SE1010	(Silicon NPN)—Mixer	
AX1202	(Silicon NPN)—1st I.F. Amplifier	
BF185	(Silicon NPN)—2nd I.F. Amplifier	
AY1110	(Silicon PNP)—A.F. Amplifier	
SE6002	(Silicon NPN)—Audio Driver	
AC187	(Germanium NPN) }	Audio Output
AC188	(Germanium PNP) }	(matched pair)
OA90	(Germanium Diode)—Audio Detector	
AB1101	(Silicon Diode)—A.G.C. Detector	

Thermistor—110 ohms at 25°C.

DISMANTLING

To remove loopstick, dial lamp and dial cord assembly.

1. Adjust the tuning control until the left-hand pointer indicates 580 Kc/s. (Station 3WV).
2. Remove the two countersunk screws—one at each end of the dial scale, together with the spire nuts located above the volume and tuning controls.
   Remove the screw at the bottom of the telescopic antennae and slide out the antennae. Lift off the dial scale.
3. Remove the countersunk head screw which attaches the backing plate to the rear of the cabinet near the external aerial indicator. Ease the metal bracket in the centre of the backing-plate forward and up slightly to clear the cabinet back lip.
4. Push the ferrite aerial rod forward at each end towards the front of the cabinet.
5. By inserting a screwdriver between the tone control escutcheon and the backing plate at the tone control cut-out, lift the dial backing plate up and out, taking care not to damage the pointers.
6. To replace the backing plate, reverse the procedure. Care should be taken to locate the red dial illumination button properly — check its operation after re-assembly.

Note: By carefully following the correct procedure the pointers should not be damaged; however, before replacing the dial scale, it is advisable to check their position and clearance. If necessary, carefully bend and adjust the pointers, with a small screwdriver, to clear both the dial backing plate and the dial scale so that they line up with the setting marks at the left-hand end of both dial scales. (For the broadcast pointer the setting marks are the white squares at the top and bottom of the dial. For the short-wave pointer, the marks are the end of the yellow block and the white square above the figure 14).

To remove coil chassis and fine tuning control.

1. Remove dial backing plate as above.
2. Remove both dial and drive cords, pointers and plastic drive drum.
3. Slip ties, attaching loopstick to cabinet, off each end of rod, ease Tone/Fine Tuning control escutcheon forward to clear Fine Tuning knob and remove knob.
4. Unsolder both wires to Fine Tuning capacitor, seven flexible leads between coil chassis and printed circuit board and both leads to external aerial and earth sockets.
5. From inside the receiver use a screwdriver to lever forward the Band Selector knob, and remove.
6. Remove screws in centre of rubber grommets attaching chassis plate to cabinet.
7. By pivoting about its tuning shaft end, lift plate clear of brass supports and remove, complete with loopstick antennae assembly.
8. To replace the coil chassis assembly, reverse the procedure, remembering to re-solder the connections to the Fine Tuning control before replacing its knob. Check the dress of the leads to the loopstick coils to ensure clearance from the dial cords, pointers and Fine Tuning knob. When re-stringing the dial cords refer to the label in the cabinet back and check, by tuning throughout the complete range that the cords do not foul.

To remove the speaker.

It is not necessary to remove the coil chassis assembly. Remove the three screws attaching the printed circuit board to the cabinet, remove the self-tapping screw and the nuts in the speaker fixing brackets, unsolder the leads to the speaker and slide it out towards the volume control end.

To service printed circuit board.

Most servicing can be carried out with the printed circuit board in position, but if removal is necessary, the board can be freed by removing the three attaching screws so that access can be gained to all components.

SERVICE NOTES

Because transistors can be permanently damaged by excessive heat, voltage or current flow, the following precautions should be observed when servicing this receiver. Supply polarity should never be reversed or allowed to exceed 10 volts. Note that the R.F. and I.F. transistors are fed with negative voltage to their emitters, the positive side of the battery being grounded. Consequently, voltage measurements on these transistors should

be made relative to the decoupled negative rail with the receiver and/or meter ungrounded.

Never remove or replace a transistor or circuit component without first switching off the power. When soldering transistor leads, use a small, low-voltage iron, solder as rapidly as possible, and keep the iron clear of the transistor body or other components. If a 240-volt iron is used, make sure it is properly earthed, and disconnect all external connections to the receiver to avoid damaging transistors through leakage and capacitance effects.

To unsolder multi-terminal components (I.F. transformers, etc.) it is best to apply heat simultaneously to all terminals, using a special iron tip. If a normal tip is used, apply the iron to each soldered joint in turn and brush away the solder with a stiff brush.

Ohm meter checks are of limited use in servicing printed circuit boards, as associated transistors may be damaged or give misleading results. It is better to make voltage checks on each stage in turn and compare with the figures on the circuit diagram. Care should be taken to avoid accidental short-circuits with the voltmeter probes, as transistors can be instantly destroyed.

When using a signal generator, a blocking capacitor should be connected in the live lead to prevent disturbance of the transistor's D.C. operation. Before connecting the generator adjust its attenuator for low output. Signal generators designed for vacuum tube circuits can often deliver more signal than a transistor can safely handle.

Silicon transistors which are suspected to be faulty may be checked for opens and shorts with a 20,000 ohms per volt multimeter, provided it is not used on its low ohms range and does not use a battery of more than 1.5 volts.

Remove the transistor from the circuit, connect one of the meter leads to its base and check to the emitter and collector. Then reverse the polarity of the meter leads. Both base - emitter and base - collector junctions should read low resistance with one polarity and open circuit with the other. Next check that the collector to emitter reads open circuit with both polarities of the meter leads.

The output load must not be reduced below 15 ohms during tests, as the maximum dissipation of the output transistors could be exceeded. If either output transistor is faulty replace it with one of the same gain range (see letter on top of transistor body) or replace the pair. Refit the heat sink fins to the new transistors.

Do not disturb the I.F. alignment unless a I.F. transformer or 330 pF tuning capacitor is replaced or it is obvious that the I.F. alignment is badly detuned. At the factory a sweep method is used for alignment of this section to ensure an accurate and uniform response and, merely "peaking up" with a 455 kHz. generator will compromise the receiver's bandwidth and selectivity. If I.F. alignment is necessary and a sweep generator is not available, follow the procedure outlined later in this manual.

PRELIMINARY TESTS

Regardless of what the stated complaint may be, the following overall conditions should be checked.

1. Condition of the battery (voltage, with the set turned on).
2. Overall current drain with set turned off and meter bridged across On/Off switch (should be 10 - 15 mA.)
3. Sensitivity by listening test on all four bands.
4. Distortion by listening test.

ALIGNMENT TABLE - XI CHASSIS

Order	Connect Generator To	Tune Generator To	Tune Receiver To	Operation
Turn Waveband Selector to SW1				
1	S.W.1 R.F. Trimmer	452.5 kHz.	L.F. Limit	Peak IFT5
2	,, ,,	452.5 kHz.	,, ,,	Peak IFT4
3	,, ,,	455.0 kHz.	,, ,,	Peak IFT3
4	,, ,,	452.5 kHz.	,, ,,	Peak IFT2
5	,, ,,	456.0 kHz.	,, ,,	Peak IFT1
Repeat steps 1 - 5*, check with generator that response is approximately —3 dB at 452.5 and 457.5 kHz.				
6	—	—	L.F. Limit	Pointers should line up with top and bottom set marks at extreme left of dials
Turn Waveband Selector to M.W.				
7	Aerial input socket via 4.7K resistor	1500 kHz.	1500 kHz. set marks, L.H. dial	Peak M.W. Oscillator Trimmer (VC13)
8	,, ,,	1500 kHz.	,, ,,	Peak M.W. R.F. Trimmer (VC6)
9	,, ,,	1500 kHz.	,, ,,	Peak M.W. Aerial Trimmer (VC1)
10	,, ,,	600 kHz.	600 kHz. set marks, L.H. dial	Peak M.W. Oscillator Coil (T9)
11	,, ,,	600 kHz.	,, ,,	Peak M.W. R.F. Coil (T5)
12	,, ,,	600 kHz.	,, ,,	Peak M.W. Aerial Coil (T1)**
Repeat steps 7 - 12				
13	,, ,,	1000 kHz.	Signal Generator	Check tracking of Ae. and R.F. Coils with Ferrite & Aluminium
Turn Waveband Selector to SW1				
14	,, ,,	4.5 MHz.	4.5 MHz. mark on SW1 dial	Peak SW1 Oscillator Trimmer (VC14)***
15	,, ,,	4.5 MHz.	,, ,,	Peak SW1 R.F. Trimmer (VC7)
16	,, ,,	4.5 MHz.	,, ,,	Peak SW1 Aerial Trimmer (VC2)
17	,, ,,	1.8 MHz.	1.8 MHz. mark on SW1 dial	Peak SW1 Oscillator Coil (T10)
18	,, ,,	1.8 MHz.	,, ,,	Peak SW1 R.F. Coil (T6)
19	,, ,,	1.8 MHz.	,, ,,	Peak SW1 Aerial Coil (T2)**
Repeat steps 14 - 19				
20	,, ,,	3.0 MHz.	Signal Generator	Check tracking of Ae. and R.F. Coils with Ferrite & Aluminium
Turn Waveband Selector to SW2				
21	Aerial input socket via a 22pF capacitor	12.5 MHz.	12.5 MHz. mark on SW2 dial	Peak SW2 Oscillator Trimmer (VC15)***
22	,, ,,	12.5 MHz.	,, ,,	Peak SW2 R.F. Trimmer (VC9)
23	,, ,,	12.5 MHz.	,, ,,	Peak SW2 Aerial Trimmer (VC3)
24	,, ,,	5.5 MHz.	5.5 MHz. mark on SW2 dial	Peak SW2 Oscillator Coil (T11)***
25	,, ,,	5.5 MHz.	,, ,,	Peak SW2 R.F. Coil (T7)
26	,, ,,	5.5 MHz.	,, ,,	Peak SW2 Aerial Coil (T3)
Repeat steps 21 - 26				
27	,, ,,	9.0 MHz.	Signal Generator	Check tracking by sensitivity check.

Turn Waveband Selector to SW3. Connect a detector probe as in Fig. 1 (see page 5) to the green lead from the base of the mixer and to the wiper of the volume control. Disconnect the yellow lead to the Oscillator.****

Order	Connect Generator To	Tune Generator To	Tune Receiver To	Operation
28	Aerial input socket via a 22 pF capacitor	15.5 MHz.	15.5 MHz. mark on SW3 dial	Peak SW3 R.F. Coil (T8)
29	,, ,,	15.5 MHz.	,, ,,	Peak SW3 Aerial Coil (T4)
30	,, ,,	27 MHz.	27 MHz. mark on SW3 dial	Peak SW3 R.F. Trimmer (VC10)
31	,, ,,	27 MHz.	,, ,,	Peak SW3 Aerial Trimmer (VC4)
Repeat steps 28 - 31.				
Disconnect the detector probe and reconnect the oscillator lead.				
32	,, ,,	27 MHz.	,, ,,	Peak SW3 Oscillator Trimmer (VC16)***
33	,, ,,	15.5 MHz.	,, ,,	Peak SW3 Oscillator Coil (T12)***
Repeat steps 32 - 33.				
34	,, ,,	21 MHz.	Signal Generator	Check tracking by sensitivity check.

* These transformers are a very high Q miniature type. It should be appreciated, then, that the amount of travel of the core to cover its tuning range is much less than in normal I.F. transformers. Tuning the I.F. is therefore critical and the following hints will prove useful.

(a) The tuning tool used should be a small plastic screwdriver whose tip fits cleanly into the tuning core.
(b) When tuning the core, do not exert any axial pressure, as the thread in the former has enough resilience to detune the I.F. when the pressure is removed.
(c) The thread in the former, or the core, may be damaged if the core is wound in and forced against the printed board. This should never happen, as only a light torque is normally required to turn the tuning core.

The cores of all five I.F. transformers should be peaked to the resonant position with the core closest to the printed circuit board. The cores of all coils on the sub-chassis should be set in the position furthest from the metal plate.

** These coils have been pre-aligned in production and under normal conditions no adjustment is necessary. To check if these coils are aligned, place a piece of ferrite and then a piece of brass or aluminium near the loopstick. If the coils are correctly set, the receiver's output will drop. If the output increases at any stage in this check, realignment of these coils is necessary. Slide the coil formers along the loopstick to adjust their inductance.

*** The oscillator frequency should be above the tuned frequency on all bands. To ensure that it is not incorrectly set below, check that a signal can be received, at reduced sensitivity, with the generator set 910 kHz. above the tuned frequency.

**** The use of this detector probe allows a much more accurate alignment of the aerial and R.F. circuits on the SW3 band than if the normal procedure is employed. If the detector probe is not used, tuning the trimmers at 27 MHz. is difficult because of oscillator pulling and the receiver's image rejection and signal to noise ratio may suffer.

Detector probe for aerial and R.F. alignment on SW3

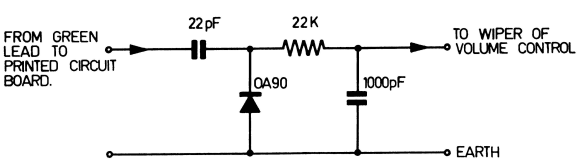


FIG."1"

Circuit Amendments

The circuit diagram included in this manual is correct as at the time of printing; however, the circuit on the label in the back of some receivers is slightly incorrect in the R.F. stage A.G.C. feed. A shunt feed using a 6.8K resistor and a 1000 pF capacitor has been substituted for the series feed system shown on the labels. In addition, the damping resistor across IFT3 has been increased from 68K to 100K on later production models.

PARTS LIST — X1-1K

REF.	PART NO.	DESCRIPTION
		RESISTORS
R1	Part of 259-1901	4.7K ± 20% ½W
R1a	740-0382	6.8K ± 10% ½W
R2	Part of 259-1921	4.7K ± 20% ½W
R2a	Part of 259-1911	8.2K ± 20% ½W
R3	740-0652	100 ohms ± 10% ½W
R3a	740-0182	470K ± 10% ½W
R4	740-0152	150K ± 10% ½W
R4a	740-0782	120K ± 10% ½W
R5	740-0242	33K ± 10% ½W
R6	740-0012	470 ohms ± 10% ½W
R7	740-0782	120K ± 10% ½W
R8	740-0082	10K ± 10% ½W
R9	740-0062	3.9K ± 10% ½W
R10	740-0042	2.7K ± 10% ½W
R11	740-0062	3.9K ± 10% ½W
R12	740-0022	1K ± 10% ½W
R13	740-0012	470 ohms ± 10% ½W
R14	740-0351	47K ± 5% ½W
R15	740-1802	300 ohms ± 5% ½W
R16	740-1342	15K ± 5% ½W
R17	740-1812	2K ± 5% ½W
R18	740-0032	2.2K ± 10% ½W
R19	740-0271	150 ohms ± 10% ½W
R20	740-0162	220K ± 10% ½W
R21	740-0142	100K ± 10% ½W
R22	740-1012	220 ohms ± 5% ½W
R23	740-0032	2.2K ± 10% ½W
R24	740-0262	560 ohms ± 10% ½W
R25	740-1382	1.8K ± 5% ½W
R26	740-0962	10K ± 5% ½W
R27	740-0351	47K ± 5% ½W
R28	740-1002	4.7K ± 5% ½W
R29	740-0652	100 ohms ± 10% ½W
R30	740-1012	220 ohms ± 5% ½W
R31	740-0072	4.7K ± 10% ½W
R32	740-0862	18K ± 10% ½W
R33	740-0332	100K ± 5% ½W
R34	740-1732	330K ± 5% ½W
R35	740-1772	680K ± 5% ½W
R36	740-0862	18K ± 10% ½W
R37	740-0132	82K ± 10% ½W
R38	740-0442	120 ohms ± 10% ½W
R39	740-0462	33 ohms ± 10% ½W
R40	740-1012	220 ohms ± 5% ½W
R41	740-0642	1.5K ± 5% ½W
R42	740-1342	15K ± 5% ½W
R43	740-0922	330 ohms ± 10% ½W
R44	740-1043	27 ohms ± 10% ½W
		CAPACITORS
C1		Not used
C2	271-1751	15pF ± 5% NPO Disc
C3	271-1831	47pF ± 5% NPO Tube
C4	271-1271	1000pF ± 20% Disc

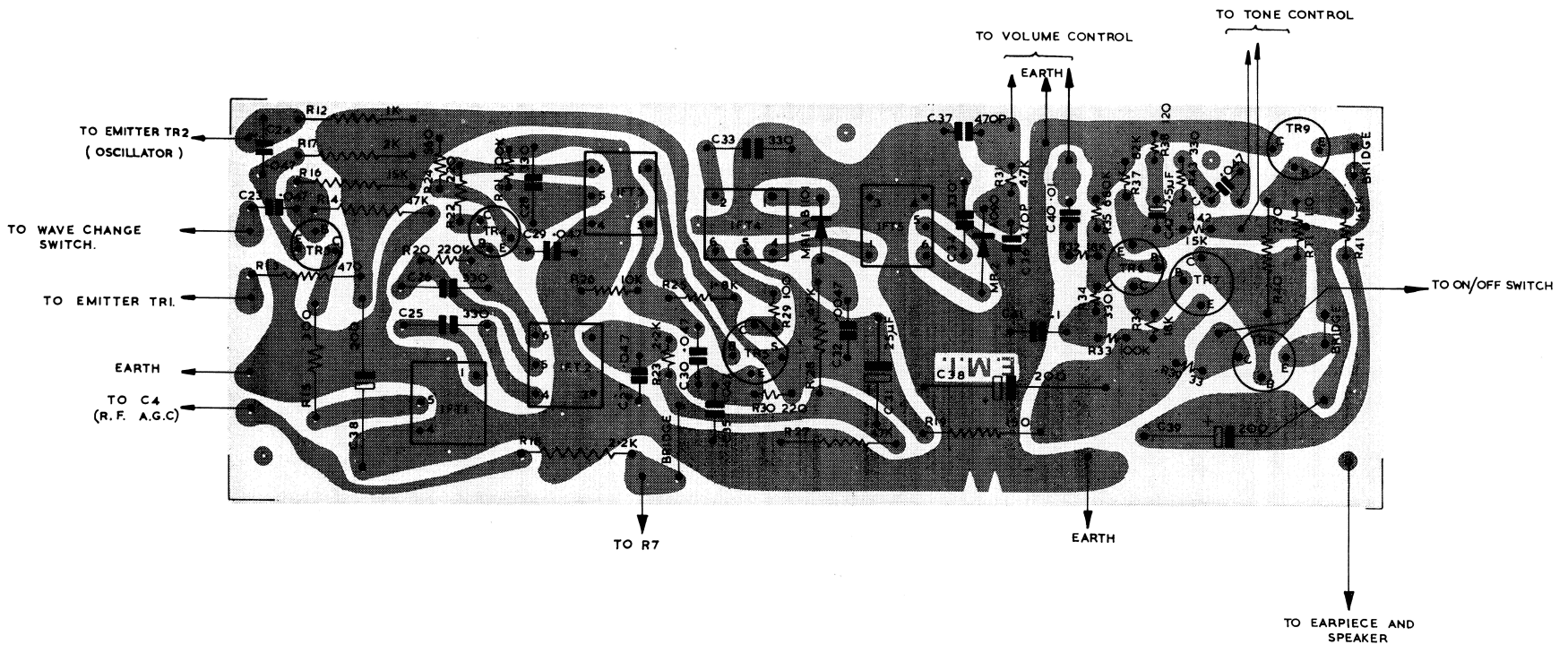
REF.	PART NO.	DESCRIPTION
		CAPACITORS (continued)
C5	280-3531	680pF ± 5% 100VW Styroseal
C6		Not used
C7	271-1131	.047uF Lead Thru
C8	269-1211	12.5uF 25VW Electro
C9	271-0471	6.8pF ± ½pF Disc
C10		Not used
C11	271-1751	15pF ± 5% NPO Disc
C12	271-1831	47pF ± 5% NPO Tube
C13	280-3531	680pF ± 5% 100VW Styroseal
C14	271-1131	.047uF Lead Thru
C15	271-1261	.01uF ± 20% 25V Disc
C16	280-3521	388pF ± 1% 100V Styroseal
C17	271-1261	.01uF ± 20% 25V Disc
C18	280-3511	1100pF ± 2% 100VW Styroseal
C19	271-0801	.0047uF ± 20% 25V Disc
C20	280-3501	3000pF ± 5% 100VW Styroseal
C21	271-0571	22pF ± 10% NPO Tube
C21a	271-1271	1000pF ± 20% Disc
C22	280-3531	680pF ± 5% 100VW Styroseal
C23	271-0731	.047uF +80% —20% 25V Redcap
C24	271-0731	.047uF +80% —20% 25V Redcap
C25	280-3081	330pF ± 5% 100V Styroseal
C26	280-3081	330pF ± 5% 100V Styroseal
C27	271-0841	.047uF +80% —20% 25V Redcap
C28	280-3081	330pF ± 5% 100VW Styroseal
C29	271-0731	.047uF +80% —20% 25V Redcap
C30	271-0731	.047uF +80% —20% 25V Redcap
C31	269-1171	25uF 6.4V Electro
C32	271-0801	.0047uF ± 20% 25V Redcap
C33	280-3081	330pF ± 5% 100V Styroseal
C34	280-3081	330pF ± 5% 100V Styroseal
C35	271-0731	.047uF +80% —20% 25V Redcap
C36	271-0841	470pF ± 20% K2000
C37	271-0841	470pF ± 20% K2000
C38	269-1351	200uF 10V Electro
C39	269-1351	200uF 10V Electro
C40	271-1201	.01uF +100% —0% 50V
C41	271-0761	0.1uF +80% —20% 25V Redcap
C42	269-1211	12.5uF 25V Electro
C43	271-1151	.047uF ± 20% Redcap
C44	271-1481	.0033uF ± 20% Disc
C44a	271-1201	.01uF +100% —0% 50V
C45	269-1351	200uF 10V Electro

PARTS LIST — X1-1K

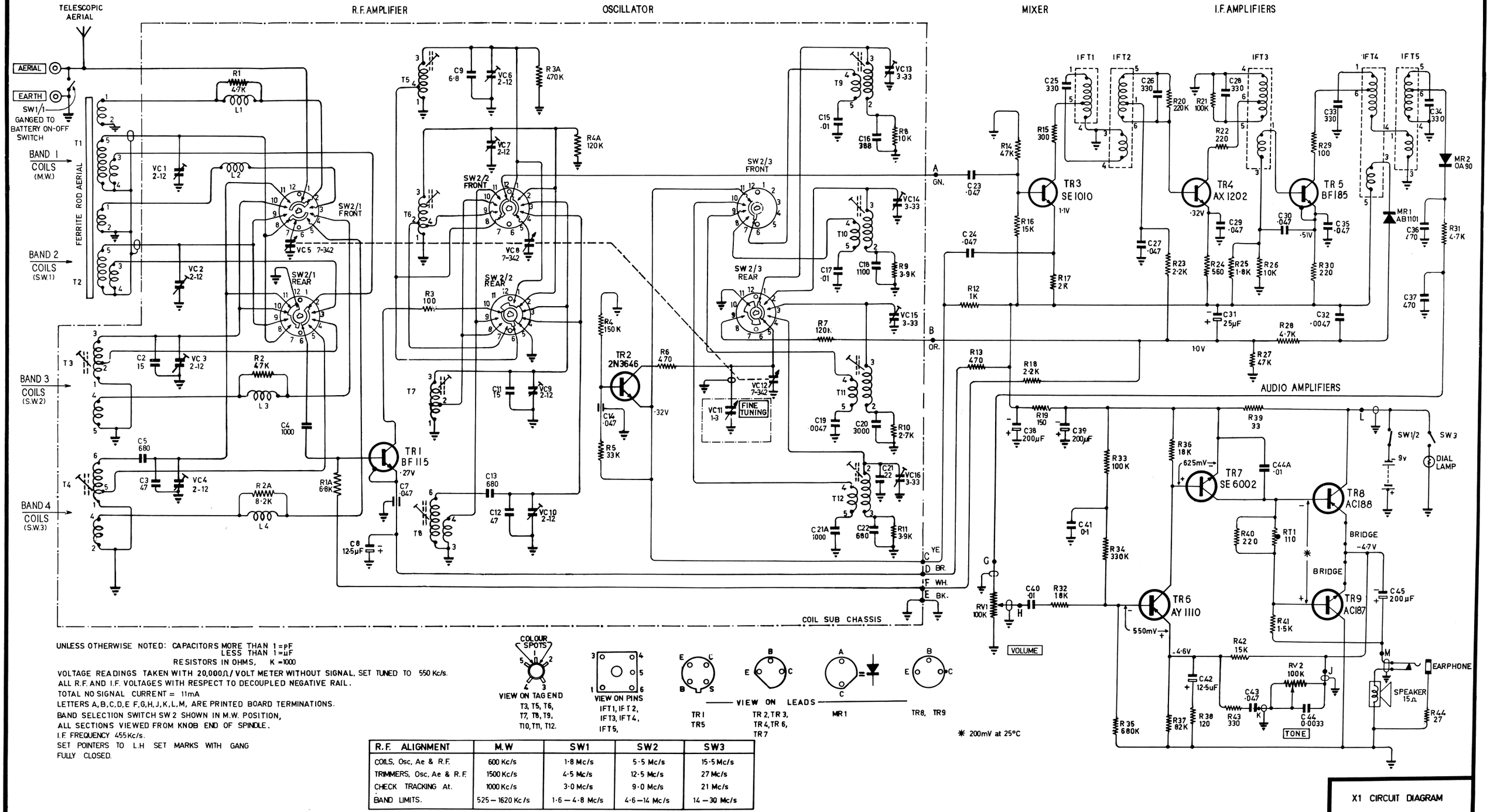
REF.	PART NO.	DESCRIPTION
		POTENTIOMETERS
RV1	677-1712	100K—Volume and Switch
RV2	677-1702	100K—Tone Control
		SEMI-CONDUCTORS
TR1	932-2771	BF115 (Silicon NPN)—R.F. Amplifier
TR2	932-2861	2N3646 (Silicon NPN)—Oscillator
TR3	932-2681	SE1010 (Silicon NPN)—Mixer
TR4	932-3051	AX1202 (Silicon NPN)—1st I.F. Amplifier
TR5	932-3091	BF185 (Silicon NPN)—2nd I.F. Amplifier
TR6	932-2891	AY1110 (Silicon PNP)—A.F. Amplifier
TR7	932-2581	SE6002 (Silicon NPN)—Audio Drive
TR8, TR9	932-2901	AC188 (Germanium PNP) / AC187 (Germanium NPN) Audio Output (Matched Pair)
MR1	932-2601	AB1101 (Silicon Diode)—A.G.C. Detector
MR2	932-0971	OA90 (Germanium Diode)—Audio Detector
		TRANSFORMERS
T1	253-0391	Aerial Coil, M/W
T2	Part of 253-0391	Aerial Coil, SW1
T3	253-0401	Aerial Coil, SW2
T4	253-0411	Aerial Coil, SW3
T5	255-0081	Coil, R.F. M/W
T6	255-0091	Coil, R.F. SW1
T7	255-0101	Coil, R.F. SW2
T8	255-0111	Coil, R.F. SW3
T9	257-0271	Coil, Oscillator M/W
T10	257-0281	Coil, Oscillator SW1
T11	257-0291	Coil, Oscillator SW2
T12	257-0301	Coil, Oscillator SW3
IFT1	906-0481	Transformer I.F.1 (Red & Grey)
IFT2	906-0491	Transformer I.F.2 (Grey & Orange)
IFT3	906-0842	Transformer I.F.3 (Red & Red)
IFT4	906-0501	Transformer I.F.4 (Grey & Green)
IFT5	906-0842	Transformer I.F.5 (Red & Red)
		MISCELLANEOUS
VC1, VC2, VC 3, VC4	281-0431	Aerial Trimmers
VC5, VC8, VC12	281-0411	Tuning Gang
VC6, VC7, VC9, VC10	281-0431	R.F. Trimmers
VC11	281-0421	Fine Tuning Capacitor
VC13, VC14, VC15, VC16	281-0031	Oscillator Trimmers
L1	259-1901	Coil, Aerial Loading M/W
L2	259-1911	Coil, Aerial Loading SW1
L3	259-1921	Coil, Aerial Loading SW2
L4	259-1432	Coil, Aerial Loading SW3
RT1	752-0121	110 ohm Thermistor
SW2	855-0811	Band Selector Switch
	300-0441	Ferrite Aerial Rod

CABINET SPARE PARTS

189-1831	Cabinet Back, Charcoal
189-1841	Cabinet Back, Tan
189-1851	Cabinet Back, Red
294-1411	Container, Earpiece, Charcoal
294-1421	Container, Earpiece, Tan
294-1431	Container, Earpiece, Red
106-0101	Aerial, Telescopic
372-0231	Disc, Knob
416-0081	Foot
517-2791	Knob, Assembly
517-2861	Knob, Function
518-6861	Lead, Earth
526-6871	Lead, Aerial
831-2081	Earpiece and Plug
190-3141	Cabinet, Front
244-1101	Clip, Handle
381-0201	Drum, Dial
297-0091	Dial Cord
419-0541	Felt, Speaker Cover
453-1612	Grille
470-0291	Handle, Bar
470-0301	Handle, End, L.H.
470-0311	Handle, End, R.H.
517-2831	Knob, Tone
517-2841	Knob, Indicator Lamp
517-2871	Knob, Fine Tuning
561-1941	Medallion, Trade Mark
671-0782	Pointer
794-2061	Scale, Dial
794-2071	Scale, Control Indicator
794-2081	Scale, Function
824-0791	Socket, Aerial and Earth
824-1311	Socket, Earpiece
831-2811	Speaker, 4 x 7 PG, 15 ohms, E.M.I.
932-1791	Lamp, Dial, 12V 2W
814-1952	Screw, Captive, Cabinet Back
802-4611	Screw, Dial Scale



PRINTED CIRCUIT BOARD — VIEW FROM COPPER SIDE



UNLESS OTHERWISE NOTED: CAPACITORS MORE THAN 1 = pF
LESS THAN 1 = µF
RESISTORS IN OHMS, K = 1000

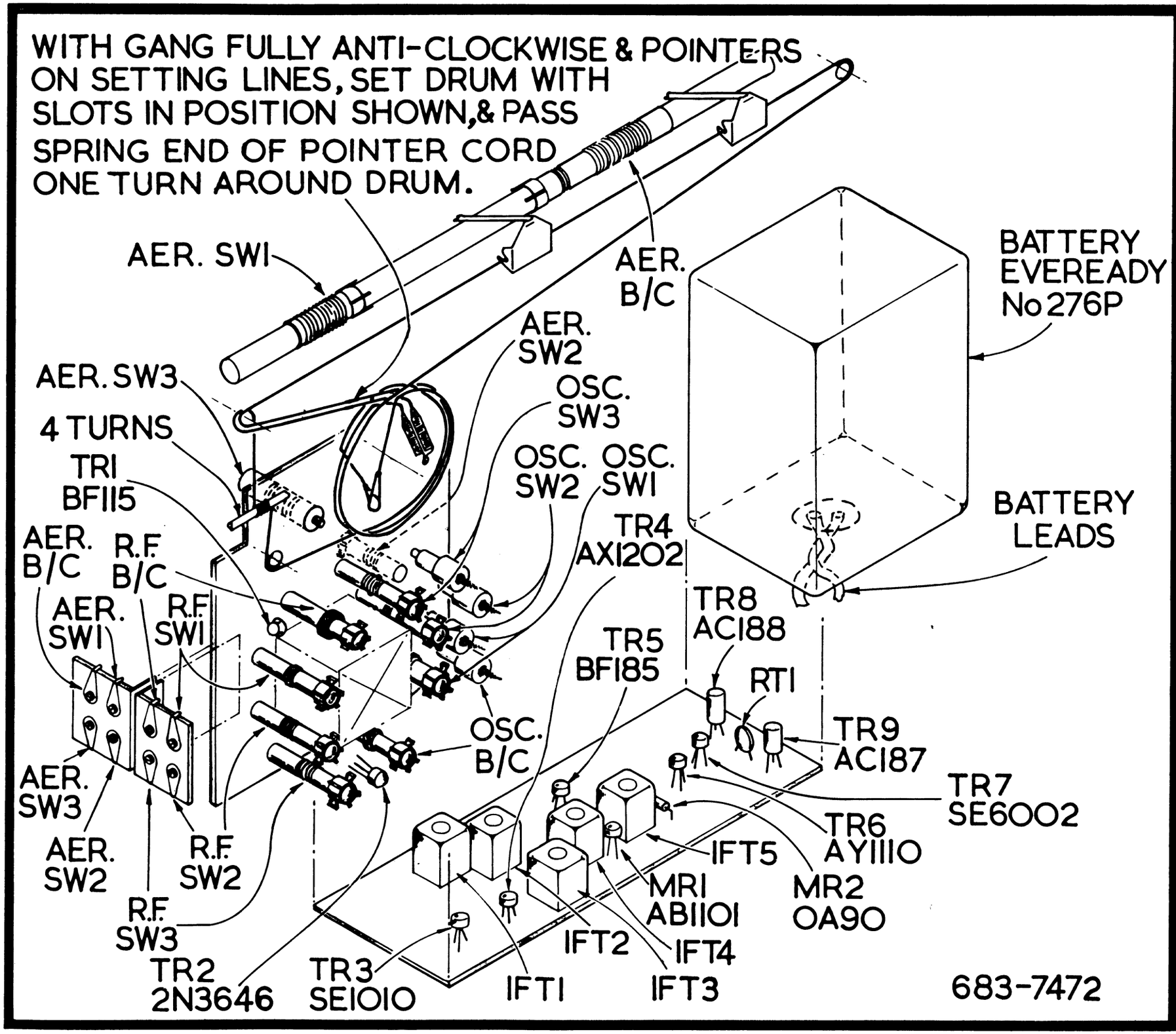
VOLTAGE READINGS TAKEN WITH 20,000Ω/VOLT METER WITHOUT SIGNAL, SET TUNED TO 550 Kc/s.
ALL R.F. AND I.F. VOLTAGES WITH RESPECT TO DECOUPLED NEGATIVE RAIL.
TOTAL NO SIGNAL CURRENT = 11mA
LETTERS A, B, C, D, E F, G, H, J, K, L, M, ARE PRINTED BOARD TERMINATIONS.
BAND SELECTION SWITCH SW 2 SHOWN IN M.W. POSITION,
ALL SECTIONS VIEWED FROM KNOB END OF SPINDLE.
I.F. FREQUENCY 455 Kc/s.
SET POINTERS TO L.H SET MARKS WITH GANG FULLY CLOSED.

* 200mV at 25°C

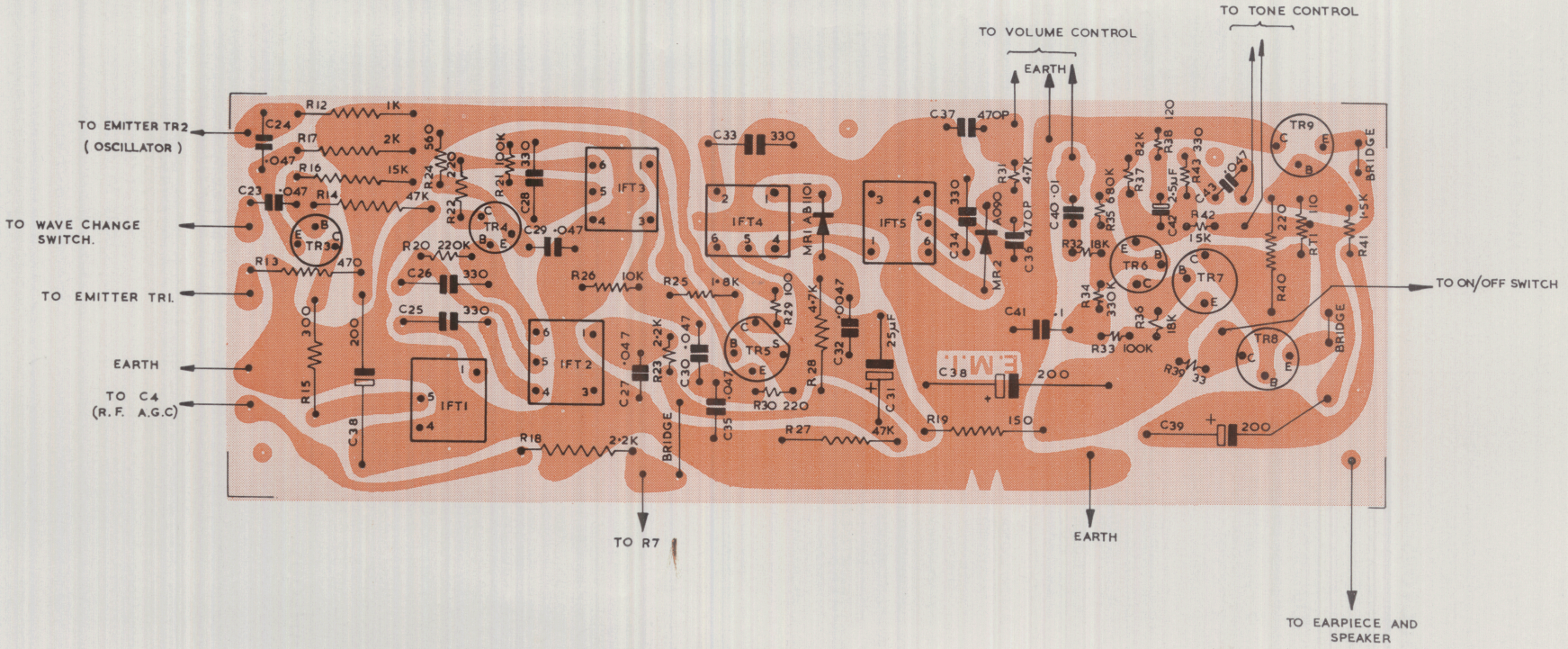
R.F. ALIGNMENT	M.W	SW1	SW2	SW3
COILS, Osc, Ae & R.F.	600 Kc/s	1·8 Mc/s	5·5 Mc/s	15·5 Mc/s
TRIMMERS, Osc, Ae & R.F.	1500 Kc/s	4·5 Mc/s	12·5 Mc/s	27 Mc/s
CHECK TRACKING At.	1000 Kc/s	3·0 Mc/s	9·0 Mc/s	21 Mc/s
BAND LIMITS.	525 — 1620 Kc/s	1·6 — 4·8 Mc/s	4·6 — 14 Mc/s	14 — 30 Mc/s

X1 CIRCUIT DIAGRAM

CIRCUIT DIAGRAM — X1



DIAL CORDING DIAGRAM



PRINTED CIRCUIT BOARD — VIEW FROM COPPER SIDE