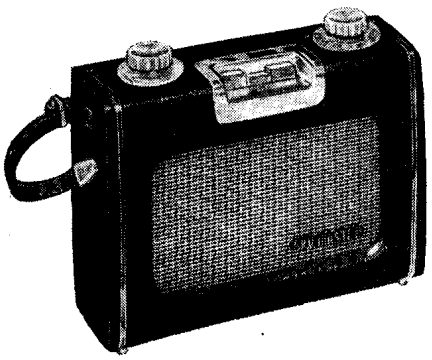
Supplement to Wireless & Electrical Trader, 23 February 1963

"TRADER" SERVICE SHEET

1589

EVER READY

Sky Master



HOUSED in a fabric covered wooden case with top controls, the Ever Ready Sky Master is a transistorized portable radio receiver covering medium and long wavebands. It operates from a single 9v battery and employs six transistors and four diodes.

Waveband ranges are selected by a press-button unit and are as follows: 192-555m (m.w.) and 1,070-1,870m (l.w.).

Output is greater than 500mW for 10% harmonic distortion and consumption is 120mA at 450mW and 46mA at 50mW. Quiescent current 20mA at normal temperature.

Release date and original price : October 1962 £13 17*s. Purchase tax extra.*

TRANSISTOR ANALYSIS

Transistor voltages given in the table in col. 3 were derived from information supplied by the maufacturer. They were measured on an electronic voltmeter which had a high input impedance.

If a low impedance meter is used some inaccurate readings will be produced and since some of the base resistors are of comparatively high value, the readings may erroneously indicate incorrect base bias conditions, i.e. base voltages may read lower than emitter voltages.

CIRCUIT DESCRIPTION

VT1 operates as a self-oscillating mixer and receives the input-signal from **L3/4** (m.w.) or **L2** (l.w.) via the appropriate switch section and **C4.** An external car-type aerial may be coupled to the ferrite rod via the socket and **L1.** Aerial coil tuning is by **C2** and **C3** on both wavebands with **C1** in parallel on l.w.

The heterodyne signal is generated by positive feedback from collector to emitter of **VT1** via **L6** and **L7** through **L9** which is tuned at oscillator frequency. The resultant i.f. signal in **VT1** collector circuit is at 470kc/s and this is coupled via the double-tuned transformer **L8, L10** to the base of the first i.f. amplifier **VT2.** Diode **D1** conducts on strong signals to supplement normal a.g.c. action by heavily damping the output from **VT1.**

Following amplification by **VT2** and **VT3** the i.f. signal is rectified by the detector **D2** and the positive d.c. output is fed via **R10** to **VT2** base as a.g.c. voltage. The audio component developed across **R14** is fed via **C24** to the driver **VT4** which has the phase-splitting transformer **T1** connected in its collector circuit. The secondaries of **T1** couple the audio signals to the bases of **VT5** and **VT6** in anti-phase and the output from **VT5** and **VT6** which operate in Class B push-pull is fed to the speech coil **L15** via the matching transformer **T2.** Output

(*Continued overleaf col.* 1)

Transistor Table

Transistor		Emitter (V)	Base (V)	Collector (V)
VT1	AF117	0.94	1.13	6.65
VT2	AF117	0.66	0.92	4.6
VT3	AF117	0.91	1.28	6.7
VT4	OC81D	1.28	1.38	7.9
VT5,VT6	OC81	0.02	0.17	9.0

VT5 and VT6 emitter/base voltage—0.15*V*

Capacitors

C1	120pF	B1
C2	401pF	A1
C3	60pF	B1
C4	0·01μF	B1
C5	560pF	A2
C6	0·022μF	B1
C7	165pF	A1
C8	0·1μF	B1
C9	560pF	A2
C10	60pF	B1
C11	250pF	B1
C12	120pF	B1
C13	1·6μF	B2
C14	270pF	B2
C15	10μF	B2
C16	0·1μF	B2
C17	0·1μF	B2
C18	270pF	B2
C19	250pF	B2
C20	0·022μF	B2
C21	0·022μF	B2
C22	0·01μF	B2
C23	160μF	B2
C24	0·5μF	B2
C25	0·047μF	C2
C26	160μF	C2
C27	160μF	C1

Resistors

R1	33kΩ	B1
R2	6·8kΩ	B1
R3	1kΩ	B1
R4	680Ω	B2
R5	100Ω	B2
R6	150kΩ	B1
R7	56kΩ	B2
R8	680Ω	B2
R9	2·2kΩ	B2
R10	8·2kΩ	B2
R11	22kΩ	B2
R12	4·7kΩ	B2
R13	1·2kΩ	B2
R14	5kΩ	C1
R15	3·9kΩ	B2
R16	33kΩ§	C2
R17	10kΩ*	C2
R18	750Ω	C2
R19	470Ω¶	C2
R20	150Ω	C2
R21	VA1039†	C2
R22	270Ω	C2
R23	1·2kΩ	C2
R24	4·7–10Ω	C2

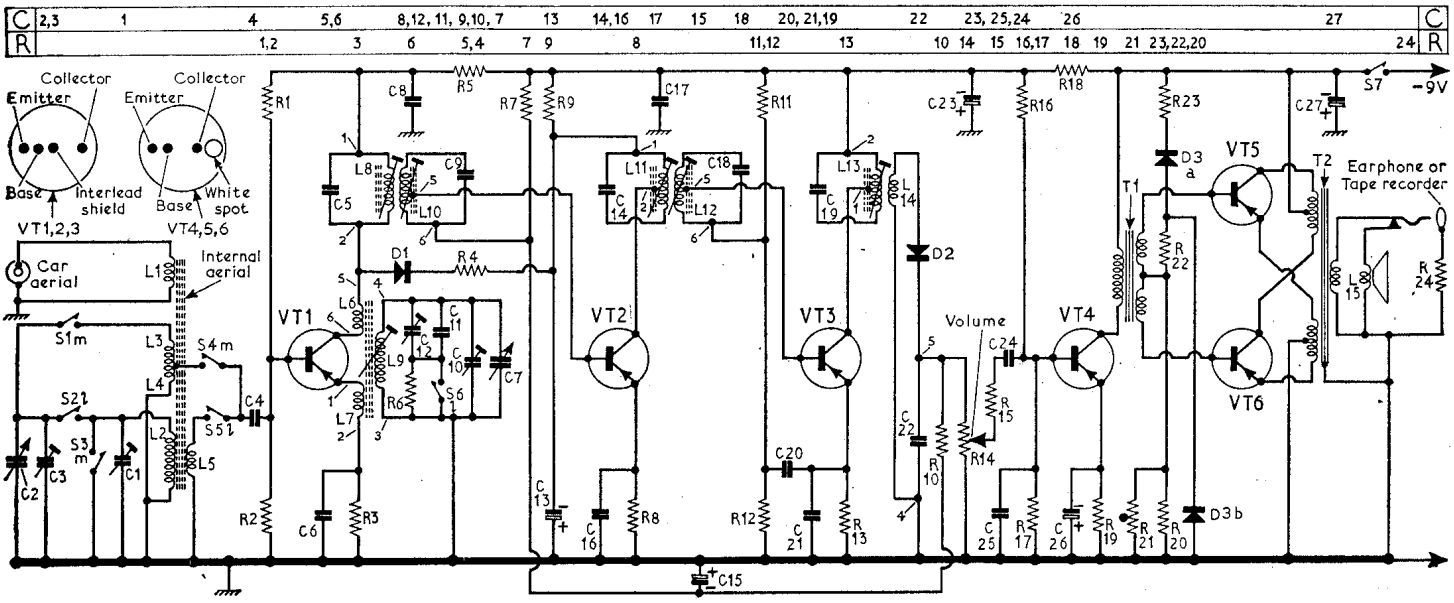
Coils

L1	—	A1
L2	—	A1
L3	—	C1
L4	—	C1
L5	—	A1
L6	—	A1
L7	—	A1
L8	—	A2
L9	—	A1
L10	—	A2
L11	—	B2
L12	—	B2
L13	—	B2
L14	—	B2
L15	3Ω	—

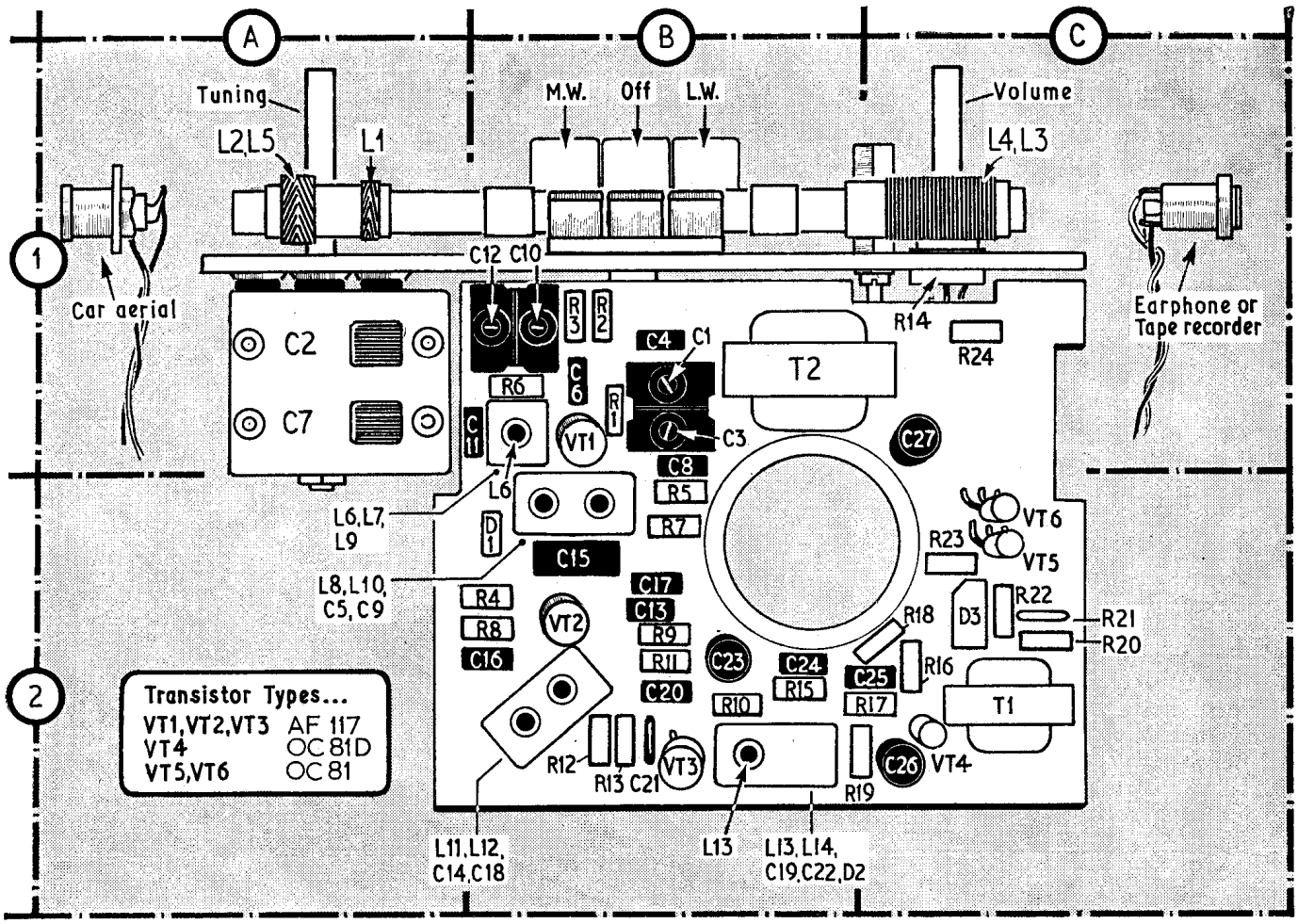
Miscellaneous

T1	—	C2
T2	—	B1
D1	0A79	B2
D2	OA90	B2
D3	P9/1D	C2
S1-S7	—	—

†*Or C.I.C.E. A/T.*
§*Or* 68*k*Ω.
**Or* 22*k*Ω.
¶*Or* 270Ω.



Circuit diagram and transistor terminal connections of the Ever Ready Sky Master.



Component-side view of the chassis and external sockets in the same relative positions as they occupy in the case.

Circuit Description—*continued*

stage base bias is stabilized by **D3** in conjunction with **R21.**

CIRCUIT ALIGNMENT

Equipment Required.—An accurately calibrated a.m. signal generator; an audio output meter or a low voltage a.c. voltmeter; an r.f. coupling coil constructed by winding 20 turns of 20-24 s.w.g. enamelled copper wire on a 4 inch diameter former and a bladed-type trimming tool.

During alignment, reduce the signal input progressively to the lowest convenient working level to avoid a.g.c. action. All r.f. alignment adjustments should be made with the chassis in its case.

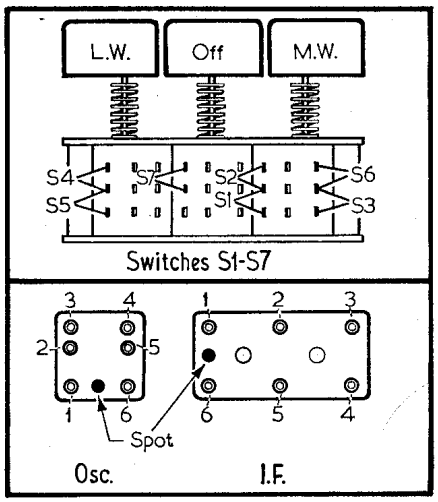
1.—Connect the audio output meter in place of the loudspeaker or connect the a.c. voltmeter across the loudspeaker. (In the latter case the loudspeaker may be substituted by a 3Ω dummy load). Set the volume control to maximum output and the tuning capacitor to its approximate mid position.

2.—Place the r.f. coupling coil about two feet away from the receiver with its axis at right angles to the ferrite rod and connect the signal generator output across the coil.

3.—Unscrew the cores of all five i.f. coils one complete turn. Feed in a 470kc/s signal and adjust **L13, L12, L11, L10** and **L8** once only in that order for maximum output. The first peak reached when screwing the core in is the correct one.

4.—Switch receiver to m.w. and tune to 500 m (5 on scale). Feed in a 600kc/s signal and adjust the core of **L9** for maximum output.

5.—Tune receiver to 200m (2 on scale). Feed in a 1,500kc/s signal and adjust **C10,** then **C3** for maximum output.



The waveband and on/off switches as they appear from the front of the chassis, and the oscillator and i.f. coil cans viewed from the underside.

6.—Re-tune receiver to 500m, feed in a 600kc/s signal and adjust **L3** by sliding the former along the ferrite rod for maximum output.

7.—Repeat operations 5 and 6.

8.—Switch receiver to l.w. and set the tuning gang to its fully closed position. Feed in a 160kc/s signal and adjust **C12** for maximum output.

9.—Tune receiver to 1,700m (17 on scale). Feed in 176.5kc/s signal and adjust **L2** by sliding its former along the ferrite rod for maximum output.

10.—Tune receiver 1,100m (11 on scale). Feed in a 272kc/s signal and adjust **C1** for maximum output.

11.—Repeat operations 9 and 10.

DISMANTLING

To remove the chassis from the case first pull off the volume control knob, if necessary assisting its removal by passing a length of cloth beneath the knob skirt and pulling on the cloth.

The tuning knob and scale are separate mouldings. The small knurled knob should first be removed (pull off), then the "flats" on the upper and lower sections of the tuning spindle should be aligned, allowing the tuning scale to be withdrawn from the spindle.

Take out two screws from the case top (revealed by removal of the control knobs).

Disconnect at the chassis end, the lead to the speaker, two leads to the car aerial socket and two leads to the earphone/tape socket.

Take out two Phillips-head screws from the bottom corners of the printed circuit panel and withdraw the chassis from the case.

BATTERY

One 9V Ever-Ready type PP7.

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