

**General Description :** Seven-valve (including rectifier and tuning indicator), combination amplitude-modulated/frequency-modulated table receiver for operation from A.C. mains, 200–250 volts. The receiver provides three-waveband (L.W., M.W. and S.W.) coverage plus Band II (87.5–100 Mc/s.) reception of frequency-modulated transmissions. Model 522 is an auto-radiogramophone with twin loudspeakers.

**Circuit Notes :** The valve functions for the two types of transmissions are as follows :

Valve	A.M. Stations	F.M. Stations
V <sub>1</sub> 6AJ8 . . .	Frequency changer	1st I.F. amplifier (triode section not used)
V <sub>2</sub> 6BY7 . . .	I.F. amplifier	2nd I.F. amplifier
V <sub>3</sub> 6AK8 . . .	Demodulator, A.F. amplifier (two diode sections not used)	Ratio detector, A.F. amplifier (one diode section not used)
V <sub>4</sub> 65ME . . .	Tuning indicator	Tuning indicator
V <sub>5</sub> 6BQ5 . . .	A.F. output	A.F. output
V <sub>6</sub> 6V4 . . .	H.T. rectifier	H.T. rectifier
V <sub>7</sub> 6AQ8 . . .	Not used	1st triode : Earthed-grid R.F. amplifier 2nd triode : Self-oscillating mixer

T<sub>4</sub> and T<sub>5</sub> are dual-frequency I.F. transformers, tuned to 470 kc/s. for amplitude-modulated reception and 10.7 Mc/s. for frequency-modulated reception. Apart from the primary of T<sub>4</sub> and the secondary of T<sub>5</sub>, the dual-frequency windings remain in circuit for both types of reception, the capacitances across the lower-frequency windings providing effective by-passing at the higher frequencies. Effective limiting of the amplitude variations of the frequency-modulated signals is provided by the ratio detector, so that it is unnecessary to include a separate limiting stage. The polarity of C<sub>38</sub>, the ratio detector stabilizing capacitor, should be noted.

The front-end (R.F. amplifier-mixer) sub-unit for frequency-modulated reception is fed from a compressed dipole contained within the receiver cabinet. The earthed-grid amplifier and internal screening isolate the aerial from the self-oscillating mixer, and thus prevent local oscillator radiation. The aerial-input transformer L<sub>2</sub>–L<sub>3</sub> is broadly tuned to the centre of Band II, but the anode coil (L<sub>7</sub>) and oscillator-mixer coil (L<sub>13</sub>) are permeability tuned with the control ganged to the normal capacitor-tuned circuits for amplitude-modulated reception. Output at the higher I.F. is taken from T<sub>3</sub> within the frequency-modulated sub-unit and fed to the signal grid of V<sub>1</sub>. The triode oscillator section of V<sub>1</sub> is switched out of circuit during frequency-modulated reception.

## Component Values :

### Capacitors.

C <sub>1</sub> S.W. aerial trimmer	C <sub>4</sub> A.M. Tuning	C <sub>9</sub> 0.003	C <sub>13</sub> 500 pF. (5%)
C <sub>2</sub> 75 pF. (2%)	C <sub>5</sub> M.W. aerial trimmer	C <sub>10</sub> 0.003	C <sub>14</sub> 22 pF. (5%)
C <sub>3</sub> 0.005 (10%)	C <sub>6</sub> 1000 pF.	C <sub>11</sub> 0.01	C <sub>15</sub> 220 pF. (5%)
		C <sub>12</sub> 150 pF. (5%)	C <sub>17</sub> 22 pF. (5%)

