

WIRELESS SET NO. 38

Alignment Procedure and Performance Testing

All tests to be carried out with 150 volts H.T. and 3 volts L.T. unless otherwise stated, using standard valves. Alignment must be carried out in the order given.

1. Dial Adjustment

Set the condenser vanes to the 180° position, and adjust the dial until the 7.2 Mc/s calibration mark coincides with the pointer. On locking the dial from a completely free position, the dial shall not move by more than 1/64 inch.

2. Receiver I.F. Alignment

(a) Set up an S.S.G. at 285 Kc/s modulated 30% at 1000 c/s and connect it to the grid of V1C through a 0.1 μ F condenser, with the grid cap in place. Connect a 150 ohm output meter to the phone socket, and adjust the cores of L9, L7C, L7B, and L7A, for max. output, keeping the output level at about 0.5 mW.

(b) The input required to give 0.5 mW output should be approximately 300 μ V.

3. Check the Adjacent Channel Selectivity as follows:-

(a) Adjust the S.S.G. input to give an output of 0.5 mW in the output meter.

(b) Reduce the S.S.G. frequency by approximately 20 Kc/s and increase the output voltage to twice that found in (a). The S.S.G. frequency is now gradually increased until 0.5 mW is recorded by the output meter. Note the frequency to which S.S.G. is set. Repeat the above procedure with the S.S.G. frequency increased, again noting S.S.G. frequency.

(c) The difference between these frequencies shall be not less than 14 Kc/s and the mean shall be within 2 Kc/s of 285 Kc/s.

(d) Repeat (b) using an S.S.G. input of 30dB above the value in (a).

(e) The difference between the two frequencies is calculated, and hence the cut-off slope of the response curve obtained. This shall be not less than 2dB per Kc.

4. Audio Response through I.F. Amplifier

(a) Set up the S.S.G. to the frequency midway between the two frequencies found in 3 (b) adjusting its output to give a receiver output of 0.5 mW and vary the mod. frequency from 500 to 3000 c/s. keeping the mod. depth at 30%.

(b) The output change shall not exceed ± 1.5 dB from 1000 to 500 c/s and - 7dB from 1000 to 3000 c/s.

5. M.O. Alignment

(a) Switch to send, and adjust the dial to 8.8 Mc/s. Connect a dummy aerial of 13.5 pF + 12 ohms, to the small aerial socket, and adjust the trimmer C4C, until the frequency, measured on a Wavemeter loosely coupled to the anode circuit of the M.O. is exactly 8.8 Mc/s.

(b) Set the dial to 7.4 and adjust the core of L5, until the frequency is exactly 7.4 Mc/s.

(c) Repeat (a) and (b) until calibration is correct at both ends of the band.

(d) Check the calibration every 200 Kc/s. Calibration tolerance $\pm \frac{1}{2}\%$.

6. Anode and P.A. Alignment

(a) With the dial at 8.8 Mc/s, and the dummy aerial connected, adjust C4B and C4A for maximum reading on a valve voltmeter (0 to 1.5 volt range) connected across the dummy aerial resistance.

(b) Set the dial to 7.4 Mc/s and adjust L3 and L1 for max. reading.

(c) Repeat (a) and (b) until no further improvement is possible.

(d) At some frequency between 8.3 Mc/s and 8.9 Mc/s, the valve voltmeter reading shall exceed 0.35 volts R.M.S. and at all frequencies within the tuning range, the reading shall be at least 0.25 volts R.M.S.

(e) Replace the dummy aerial with one of 28 pF + 12 ohms, connected to the large aerial socket, set the dial to 8 Mc/s, and adjust C1A for max. valve voltmeter reading. This shall be not less than 0.3 volts.

7. Receiver Calibration

(a) Connect the S.S.G. to the set through the smaller dummy aerial, and connect the output meter to the phones jack as before.

(b) With the S.S.G. and receiver dial adjusted to 8.8 Mc/s, adjust trimmer C.10.A for maximum output.

(c) Reset the S.S.G. frequency and receiver dial to 7.4 Mc/s and adjust coil L.6 for maximum output.

(d) Repeat adjustments (b) and (c) until the calibration is correct at both ends of the dial.

(e) Check the calibration of receiver every 200 Kc/s.
Tolerance $\pm \frac{1}{2}\%$.

8. Receiver Sensitivity

(a) With S.S.G. and output meter connected as in 7(a) adjust the S.S.G. output to 35 uV., the output of receiver at any frequency shall not be less than 0.5 mW.

(b) With an input of 150 uV from the S.S.G., the output of the receiver at any frequency shall not be less than 0.5 mW when the H.T. is 100 volts and L.T. is 2.3 volts.

9. Max. Audio Output

(a) Tune the receiver for max. output at any frequency, with an input from the S.S.G. just sufficient to give 0.25 mW output.

(b) On applying inputs of 25, 250, and 2,500 uV, the output shall not exceed 8 mW.

10. Selectivity Second Channel

(a) With the S.S.G. connected as above, the input is adjusted to give 0.5 mW output at 7.4, 8.0 or 8.7 Mc/s.

(b) Tune the S.S.G. to the corresponding second channel frequency, and increase its output by 25dB.

(c) The receiver output shall not exceed 0.5 mW. and there shall be no frequency, other than signal frequency, which gives more than the second channel output, with the same input.

11. Send/Receive Tracking

(a) Plug in the short aerial rod, switch to send and adjust a wavemeter to zero beat at 7.3 Mc/s.

(b) Switch to receive. Set up an S.S.G. accurately to the mean frequency found in 6. (b) and connect it to the chassis of the set. (This gives sufficient coupling to the I.F.'s with 500 mV output).

(c) The beat note obtained in the receiver phones is a measure of the difference between send/receive frequencies.

(d) Repeat at 7.7, 8.3 and 8.9 Mc/s.

(e) Repeat the procedure with 100 volts H.T. and 2.3 volts L.T.

(f) The beat note obtained should in no case exceed 3 Kc/s.

12. Drift

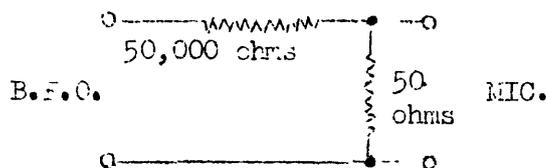
The drift in frequency during the five minutes between two and seven minutes after switching on, should not exceed 3 Kc/s. at any frequency.

13. Final P.A. Adjustment

To ensure absolutely correct P.A. tracking, a final adjustment of the P.A. trimmer may be carried out with the correct rod aerials plugged in. A sensitive receiver fitted with a tuning meter (e.g. - W/Set No.18) may be used as a monitor.

14. Audio Response

(a) Connect a B.F.O. to the microphone jack through a potentiometer as shown.



(b) Remove the P.A. anode load, and switch to send, and connect an output meter to the phone jack.

(c) At 1000 c/s the input required to give 0.5 mW output shall not exceed 10 mV. (B.F.O. output = 10 volts).

(d) At 500 c/s or 3000 c/s, the output shall not change by more than 2dB for the same input.