

TESTS

CARRY OUT THE FOLLOWING TESTS AND RECORD THE RESULTS ON THE RECORD CARD



1. Maintenance Test A1 (TC01Section 2.5 (Pg 2 of 4))



Generally the A1 service can be conducted at 26 week intervals.

Feed (Transmitter) End

- 1.1 [Check](#) all rail connections and bonding are tightened to the correct torque (Appendix F of NR/SMS/Appendix/08).

Impedance Bonds (where fitted)

- 1.2 [Check](#) the impedance bond for the following:
- Bond Covers correctly fitted and not damaged.
 - Drain holes clear (on Howells & WH3 bonds).



It may be necessary to drill drain holes if they are not present. (Pre ROSE check)

- Tuning capacitor or tuning module connections.

- 1.3 [Check](#) all rail connections and bonding are tightened to the correct torque (Appendix F of NR/SMS/Appendix/08).

Relay (Receiver) End

- 1.4 [Check](#) all rail connections and bonding are tightened to the correct torque (Appendix F of NR/SMS/Appendix/08).

- 1.5 [Measure](#) the rail-to-rail voltage at the TU or ETU rail connections (Pole) using a FSM/TTM (Vp, Appendix A of NR/SMS/Appendix/08).
For a TCU system refer to the low power figures.
For consistency this measurement shall always be carried out at the rails.

- 1.6 Where a tuned circuit is involved, [Measure](#) using a FSM/TTM the rail-to-rail voltage at the companion TU rail connection (Zero) at the frequency of the track circuit under test. (Vz).



The voltage measured in 1.5 (Vp Pole) divided by the voltage at the companion TU (Vz Zero) gives the Tuned Zone ratio (Tzr) where $Tzr = Vp/Vz$.

[Check](#) the ratio against Appendix B of NR/SMS/Appendix/08. If the ratio is below specification, the low result usually relates to badly dressed cables and or poor

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connections, therefore, [Check](#) that the cables are dressed correctly and that all Tuning units' connection are correct, clean and tight.

- 1.7 Where a tuned circuit is involved, Repeat steps 1.5 and 1.6 for the adjacent/abutting track at this tuned zone – This track is 'under test' for the purposes of these steps.
- 1.8 If a digital receiver is in use, [Check](#) the display for a steady 'PICK' or 'drop' indication. If one of these indications cycles with the indication 'ERR' then refer to Appendix E4 of NR/SMS/Appendix/08 and investigate the reason for the error. An 'ERR' state shall not be left without authority from the Supervisor.

- 1.9 If a digital receiver is in use, confirm the track circuit has a Sideband imbalance ratio less than:

- 1.6:1 for TU/ETU/SPETU
- 1.8:1 for TCU

On The Receiver

Press OK then 'NEXT' until 'INOW'

Press OK then Next Until 'USB'

Press OK and note the value.

Press 'BACK' then 'NEXT' until 'LSB'

Press OK and note the value.

Calculate and record sideband imbalance by dividing the larger value by the smaller value.



If the sideband imbalance exceeds the ratio values above, the track circuit shall be investigated to ascertain the cause of the imbalance. Carry out steps 1.20 to 1.24 of NR/SMS/Appendix/08.

- 1.10 For Analogue receivers [Measure](#) the voltage across the 1Ω resistor; compare this reading against the Record Card.
For Digital receivers [Record](#) the Inow AV current using the display on the receiver and compare this reading against the Record Card.
If the obtained reading is not within 10% of the Record Card, the reason for the discrepancy shall be investigated.
If adjustment is required, the initial setting for an analogue RX shall be selected from Appendix D Table D1 of NR/SMS/Appendix/08 using the voltage across the 1Ω resistor, followed by a drop shunt test. For digital RX, an auto-set routine shall be performed. (See Appendix E of NR/SMS/Appendix/08)



Warning: The RX current is the best measure of the track circuits' stability. Significant deviations from previous readings shall be investigated.

A significant change shall be determined by which is the greater of :
a change of $\pm 20\%$ in the track current
OR a change of $\pm 10\text{mA}$ in the track current.

- 1.11 [Record](#) the ballast and weather conditions on the track circuit Record Card.

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2. Maintenance Test A2



The A2 service (drop shunt test) shall normally be undertaken at 52 week intervals

- 2.1 Using a shunt applied to the rails between the RX tuning unit rail connections obtain a drop shunt value and a pick up shunt value.



Shunt values are detailed in NR/SMS/Part/Z03.

On the pick up shunt, allow 2 seconds between each value to allow the slow to pick relay drive from the RX to operate.

The pick up value should normally be 0.1Ω higher than the drop shunt.

- 2.2 Compare the results with previous records (if available) obtained under similar conditions. If the results are not within $\pm 10\%$ the cause shall be investigated and rectified as appropriate. A FULL TEST shall then be carried out.

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