

Test results required in conjunction with ASTER Reliability card (Sheffield DU1 July 2012 Issue 1)  
 This is not Network Rail endorsed, but all results are taken from SMS Test 254 (Dec 2012), TI 147 (Jan 2010) and document NR/L3/SIG/10665/Modo12 (Sept 2011)  
**This is on the handheld under NR/L3/SIG/10665 > Track Circuit Index > NR/ROSE/Test 254. The steps in [ ] relate to this document.**

Author: F Spowart  
 Date: 18 January 2013

Transmitter (TX) End							Receiver (RX) End												
Power supply (V)		Voltages (V)					Power supply (V)		Receiver Taps & Strapping (A/-/H)			Voltages (V)				Relay Coils		Train Shunt Across Rails (Ohms)	
		TX Unit		Tuning Unit	Rail Connections							RX Unit	Tuning Unit	Rail Connections					
I/P (AC)	O/P (AC)	1-2/3 (AC)	T1-T2 (AC)		T1-T2 (AC)	A	B	I/P (AC)	O/P (AC)	Rec. 1	Rec. 2			Strap	T1-T2 (AC)	T1-T2 (AC)	A	B	R1/R2 (DC)
[2.2]	[2.2]	[2.3]	[2.3]	[2.4]	[2.5]	[2.6]	[2.7]	[2.7]	[2.8]	[2.8]	[2.8]	[2.9]	[2.10]	[2.11]	[2.12]	[2.15]	[2.14]	[2.14]	
99 – 121v AC  (110v +/- 10%)	Between 22.5 – 29.5v	Used to compare previous readings when faulting (see App D step 5)	Not always terminated  See comment on left if terminated	50m: Min 1.6v Max 2.7v  1000m: Min 2.5v Max 5.3v	Rail to Rail voltage at TU connection	Rail to Rail voltage at adjacent TC. Do not alter FSM frequency for this test.	99 – 121v AC  (110v +/- 10%)	Between 22.5 – 29.5v	Check tapping's and strap is set to correct length of track circuit; (tapping's and strap only used as a guide, DS, PU and extremities tests take priority). <u>Note: The length is measured between both track transformers and NOT the tuning units.</u>			Used to compare previous readings when faulting (see App D step 5)	50m: Min 1.7v Max 2.8v  1000m: Min 0.25v Max 0.8v	Rail to Rail voltage at TU connection	Rail to Rail voltage at adjacent TC. Do not alter FSM frequency for this test.	Not less than 17v (ideally should be over 19v)	<u>Minimum Drop shunt 0.5v # see notes</u>	Usually around 0.5-1.0 higher than DS, but will vary depending on TC ballast condition	

Receiver (RX) End		Track Circuit Extremities	Sleeper type	Ratio Test	TI 147	Lightning Arrestor	Rail Insulation Test (Kg) (Concrete sleepers only)	TX power Test	Tuned Zone Correct (13M)	<b>Notes:</b> # If receiver is adjacent to a pair of IBJ's and drop shunt is below 0.5ohms (0.7ohms if wet), You MUST inform your supervisor, reduce gain and retest. If still unsatisfactory, change receiver & tuning unit and retest. <b>RATIO TEST RESULTS:</b> <u>2:1 or Less:</u> Relevant TU shall be replaced within 48hrs. <u>Between 3:1 &amp; 2:1:</u> if other end of TC not under test is formed of a tuned zone, test the TZR ( <i>tuned zone ratio</i> ) at the far end & if that is less than 5:1, replace TU with the lower TZR value. <u>Above 3:1:</u> No action is required. <b>Interference test:</b> Remove B24 fuse at the TX end, set FSM to TC frequency and measure AC voltage at RX unit between T1 & T2 If voltage is 25% greater than that in test 2.9, TC shall be signed out of use and SSM informed <b>immediately.</b>
Train shunt across TU T1-T2		T/Shunt Across Rails set at 0.3ohms	Concrete/Wooden	Using the test results from above (2.6 & 2.4, and 2.12 & 2.9) Work out ratios. See notes for results.	Back nut removed?	Test arrestor with a meter and record value in ohms on card. Also check centre electrode is connected to earth (TI 028)	To be done only after a fault has occurred and no fault was found during flow chart testing.  Note: Kg will not work on fastclips or powder coated pandrol clips (new).	Current reading	Distance between TU and TT. Use wheel or tape measure. If correct tick this box. If incorrect; investigate reason why, correct and fully test.	
Drop Shunt	Pick up Shunt	All extremities (tick if correct) [2.13]	State if sleepers are concrete, wood or combination of both.  Asters should NOT be fitted where metal sleepers exist		If back nut fitted is it tight? If not, try and tighten, if you cannot tighten, remove nut and answer YES. <u>All new or reused TU's etc MUST have the back nut removed beforehand.</u>			Measure current from power supply.  <b>MAX</b> current readings: 1700Hz: 1.6a 2000Hz: 1.7a 2300Hz: 1.8a 2600Hz: 1.9a  If lower than 33% of value above, change the transmitter unit.		
[2.16]	[2.16]	[2.13]								
<u>Minimum drop shunt 0.5 ohms</u>	Usually around 0.5-1.0 higher than DS, but will vary depending on TC ballast condition	To include simultaneous track circuit occupation where an overlapping section exists								

>>>REMEMBER: IF THE TRACK CIRCUIT IS TO BE DISCONNECTED AS FAULTY AT BOTH TX & RX ENDS, THE ADJACENT TRACK CIRCUIT **MUST** BE DISCONNECTED AS WELL<<<