



AUSTRALIAN RAIL TRACK CORPORATION LTD

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Discipline
Engineering Standard – NSW

Category
Signalling

Title
**Calibration of Tools and Instruments for
Signalling Applications**

Reference Number
SMP 47 – (RIC Standard: SC 00 52 00 47 SI)

Document Control

Status	Date	Prepared	Reviewed	Endorsed	Approved
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About This Standard

This Standard defines the frequency and calibration requirements for test and measuring equipment used in the testing and maintenance of all signalling equipment/systems on the ARTC network.

Document History

Primary Source – RIC Standard SC 00 52 00 47 SI Version 2.0

List of Amendments –

ISSUE	DATE	CLAUSE	DESCRIPTION
1.1	01/09/2004		▪ Reformatting to ARTC Standard
1.2	14/03/2005	Disclaimer	Minor editorial change

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1 GENERAL REQUIREMENTS

This procedure covers all calibration requirements for test and measuring equipment used in the maintenance and testing of signalling equipment on the ARTC network.

Where a particular item of equipment or test application is not listed in the following table, it is to be referred to the ARTC General Manager ISP or nominated Signalling representative for determination and any required actions that may arise from such determination, under no circumstances is the equipment to be used on operational signalling equipment/systems until approval has been obtained for its use.

Calibration requirements are related to the specific tasks being performed. An instrument used for multiple applications needs to be calibrated only to the highest standard required, and only on the measurement ranges applicable.

ARTC requirements regarding the calibration and identification of calibrated equipment are given in IMS Procedure C00P04 “Control of Inspection, Measuring and Test Equipment”

Calibration of test equipment used for signalling applications is to be carried out at a minimum to the frequency and accuracy shown in the table on the following pages.

Where the manufacturer guarantees that an instrument will exceed the accuracy stated in the following table without recalibration, for the life of the instrument or for longer intervals than stated, then the calibration frequency may be amended accordingly.

2 CALIBRATION of TOOLS and INSTRUMENTS for SIGNALLING APPLICATIONS

ITEM and TYPE	APPLICATION	TEST RANGE	CALIBRATION ACCURACY	CALIBRATION FREQUENCY
Multimeter	General checking and fault finding	All	N/A	N/A
	Certification tests - Signal lamps and power supplies	AC volts 0-12 AC volts 0-120 DC volts 0-20	+/- 0.1 @ 50Hz +/- 1 @ 50Hz +/- 0.1 volts	2 years
	Certification tests - track circuits	AC mA 0-300 AC mV 0-300 AC V 0-3 AC V 0-200 DC V 0-10 DC V 0-500	+/- 5 mA @ 2KHz +/- 5 @ 2KHz +/- 0.1 @ 50Hz +/- 1 @ 50Hz +/- 0.1 +/- 5	2 years
Tong / Clamp Ammeters AC and DC	General checking and fault finding	All	N/A	N/A
	Certification testing	AC A 0 -10 AC A 0 - 100	+/- 0.1 @ 50 Hz +/- 1 @ 50 Hz	4 yearly
'Clancy' Rail current meter	General checking and fault finding	All	N/A	N/A
	Periodic and certification testing	AC A 0 -5 AC A 0 -55 +/-	+/- 0.2 @ 50 Hz 0.5 @ 50 Hz	4 yearly (see note below)
'Ras Coil' rail current transformer	General checking and fault finding	N/A	N/A	N/A
	Periodic and certification testing	AC A 0 -5 AC A 0 -5	+/- 0.2 @ 50 Hz +/- 0.2 @ 2Kz	4 yearly (see note below)
NOTE: Calibrate rail current devices at centre top of 1 metre length of 53 kg rail, with test current injected between ends, on neutral axis				
Track circuit integrator	General checking and fault finding	N/A	N/A	N/A
TFA - Track Circuit Frequency Adaptor	General checking and fault finding	N/A	N/A	N/A
	Periodic maintenance checks	AC V 0-2 AC V 0-20	+/- 0.1 @ 2KHz +/- 1 @ 2Khz	
SFTM - Selective Frequency Track Meter	General checking and fault finding	N/A	N/A	N/A
	Periodic maintenance checks	AC V 0-2 AC V 0-20	+/- 0.1 @ 2KHz +/- 1 @ 2Khz	
Chart recorder - Analog	System monitoring	All	manufacturer's specification	Manufacturer's recommendation
Chart recorder - digital	Event monitoring	N/A	N/A	N/A
Oscilloscope	General testing and fault finding	All	N/A	N/A
Oscilloscope / meter combination	General testing and fault finding	All	N/A	N/A
	Measure critical levels	All	manufacturer's specification	Manufacturer's recommendation

CALIBRATION of TOOLS and INSTRUMENTS for SIGNALLING APPLICATIONS Cont

ITEM and TYPE	APPLICATION	TEST RANGE	CALIBRATION ACCURACY	CALIBRATION FREQUENCY
Insulation resistance tester - 'Megger'	Measure insulation resistance	Megohms Output volts Output current into short cct	-0 @ 1M 500/-0 @ 1M <3mA	2 years
Combination Insulation & Continuity Test Set	Measure insulation resistance	Megohms Output volts Output current into short cct	0 @ 60M 500/-0 @ 1M <3mA	4 years
	Continuity	Maximum Ohms	100/+0	
Continuity (Bell Test) Set	Continuity	Maximum Ohms	100/+0	N/A
Lightning Arrestor Tester	Test arrestors & varistors	Limiting volts Low scale High scale	+/- 20V +/- 50V	4 years
NOTE: Calibrate arrestor tester using standard devices as reference				
Track Shunt Tester - DN2000	General testing and fault finding	N/A	N/A	N/A
	Certification testing	N/A	-0 /+5%	4 years
Track Shunt box - fixed	General testing and fault finding	All	N/A	N/A
Track Shunt box - variable	General testing and fault finding only	All	N/A	N/A
Points gauge	Check points adjustment	thickness	+0 mm	N/A Inspect for damage yearly
Train stop gauge	Check trainstop arm adjustment	dimensions	+/- 10 mm	Inspect for damage yearly
Annett key gauge	Check annett lock warding	N/A	N/A	N/A
Crimping Tool		Tension test on sample crimps	Sigs Std	Weekly, or after each 40 hours use
Torque wrench		torque - Nm	Manufacturer's specification	N/A
Cable locator			Manufacturer's specification	Manufacturer's recommendation
Measuring wheel	Non-critical distance measurements	metres	+/- 2%	Inspect annually for wheel wear