

**SKILLS FRAMEWORK FOR PUBLIC TRANSPORT  
TECHNICAL SKILLS AND COMPETENCIES (TSC) REFERENCE DOCUMENT**

<b>TSC Category</b>	Rail Systems Maintenance					
<b>TSC</b>	Trackside Automatic Train Control Equipment Maintenance					
<b>TSC Description</b>	Implement preventive and corrective maintenance activities of Trackside Automatic Train Control equipment					
<b>TSC Proficiency Description</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Level 4</b>	<b>Level 5</b>	<b>Level 6</b>
	<b>PTP-RSM-1040-1.1</b>	<b>PTP-RSM-2040-1.1</b>	<b>PTP-RSM-3040-1.1</b>	<b>PTP-RSM-4040-1.1</b>		
	Carry out scheduled maintenance work on trackside Automatic Train Control (ATC) equipment	Conduct corrective maintenance on trackside Automatic Train Control (ATC) equipment	Troubleshoot faulty trackside Automatic Train Control (ATC) equipment to locate faults and recommend rectification methods	Diagnose root causes of trackside Automatic Train Control (ATC) equipment failure and review maintenance plans to prevent fault recurrence		
<b>Knowledge</b>	<ul style="list-style-type: none"> <li>Operating principles and functions of trackside ATC equipment</li> <li>Fundamentals of Programmable Logic Controllers (PLC)</li> <li>Concepts of fixed and moving block</li> <li>Components of trackside ATC equipment</li> <li>Procedures for servicing trackside ATC equipment in accordance to organisational maintenance procedures, Work Instructions (WI) and/or Original Equipment Manufacturer (OEM) technical manuals</li> <li>Types of tools and equipment for carrying out preventive maintenance on trackside ATC equipment</li> <li>Safety guidelines on use of tools and equipment for maintenance on Trackside ATC equipment</li> <li>Types and usage of Personal Protective Equipment (PPE) for</li> </ul>	<ul style="list-style-type: none"> <li>Operating principles and functions of trackside ATC equipment</li> <li>Fundamentals of Programmable Logic Controllers (PLC)</li> <li>Concepts of fixed and moving block</li> <li>Components of trackside ATC equipment</li> <li>Software application used on trackside ATC equipment</li> <li>Procedure for conducting system performance checks</li> <li>Common failures of trackside ATC equipment and components</li> <li>Procedures to dismantle repair, replace, and re-assemble trackside ATC equipment and components</li> <li>Types of tools and equipment for carrying out corrective maintenance on trackside ATC equipment</li> <li>Methods of power isolation</li> </ul>	<ul style="list-style-type: none"> <li>Fundamentals of telecommunication principles</li> <li>Software application used on trackside ATC equipment</li> <li>Procedure for conducting system performance checks</li> <li>Common fault symptoms in trackside ATC equipment</li> <li>Methods of locating and rectifying faults</li> <li>Types of troubleshooting techniques, equipment and tools</li> </ul>	<ul style="list-style-type: none"> <li>Factors affecting equipment and system performance</li> <li>Failure investigation and prevention methods</li> <li>Methods and tools for diagnostic analysis</li> <li>Electro-magnetic Interference (EMI) and electromagnetic compatibility (EMC)</li> <li>Organisational maintenance procedures, Work Instructions (WI) and/or Original Equipment Manufacturer (OEM) technical recommendations</li> <li>Types and methods of system performance tests on trackside ATC equipment</li> <li>Functional relationships between trackside ATC equipment, other signalling systems and overall rail system</li> </ul>		

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	<p>trackside ATC equipment maintenance</p> <ul style="list-style-type: none"> <li>Organisational maintenance documentation and fault reporting procedures</li> </ul>	<ul style="list-style-type: none"> <li>Safety guidelines on use of tools and equipment for maintenance on Trackside ATC equipment</li> <li>Types and usage of Personal Protective Equipment (PPE) for trackside ATC equipment maintenance</li> </ul>				
<p><b>Abilities</b></p>	<ul style="list-style-type: none"> <li>Perform preparation work to conduct maintenance on trackside ATC equipment</li> <li>Follow organisational procedures, WI and/or OEM technical manuals to carry out preventive maintenance on trackside ATC equipment</li> <li>Perform serviceability checks on trackside ATC equipment</li> <li>Adhere to safety guidelines and operating instructions for tools and equipment during maintenance work</li> <li>Record trackside ATC equipment maintenance activities and report occurrences of faults identified</li> </ul>	<ul style="list-style-type: none"> <li>Interpret work orders and prepare for corrective maintenance</li> <li>Apply power isolation procedures during trackside ATC equipment maintenance</li> <li>Identify track circuit and its relevant frequency</li> <li>Dismantle faulty components in trackside ATC equipment for corrective maintenance</li> <li>Carry out repair and/or replacement of faulty components</li> <li>Reassemble and reinstate trackside ATC systems</li> <li>Conduct functional tests on trackside ATC equipment and components</li> <li>Apply operating and safety measures in operating tools and equipment during maintenance work</li> <li>Record and collate documentation of trackside ATC equipment maintenance activities</li> </ul>	<ul style="list-style-type: none"> <li>Use troubleshooting tools, equipment and methods to locate and analyse causes of trackside ATC equipment faults</li> <li>Apply fault identification procedures to determine causes of trackside ATC equipment</li> <li>Recommend corrective actions for identified faults on trackside ATC equipment</li> <li>Implement procedures on safe usage of tools and equipment during maintenance work</li> <li>Analyse maintenance work documented for trackside ATC equipment to identify possible workflow improvements</li> </ul>	<ul style="list-style-type: none"> <li>Establish structured failure investigation and specify functional testing requirements</li> <li>Perform fault tree analyses to diagnose root cause failure on trackside ATC equipment</li> <li>Review organisational trackside ATC equipment maintenance procedures and/or WI</li> <li>Propose new and/or enhanced maintenance procedures and/or WI in reference to OEM technical recommendations</li> <li>Monitor overall maintenance progress for trackside ATC equipment to determine system performance reliability and effectiveness</li> <li>Develop solutions by analysing diagnostic data to prevent faults and failures recurrence</li> <li>Develop test procedures for system performance checks</li> <li>Coordinate trackside ATC equipment maintenance with other rail systems maintenance needs</li> </ul>		