

## QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR TELECOM INDUSTRY

### What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

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## Contents

1. Introduction and Contacts.....	1
2. Qualifications Pack.....	2
3. Glossary of Key Terms.....	3
4. OS Units.....	5
5. Annexure: Nomenclature for QP & OS.....	22
6. Assessment Criteria .....	24

## Introduction

### Qualifications Pack – Hand Soldering Technician Telecom Board

**SECTOR:** TELECOM

**SUB-SECTOR:** Handset

**OCCUPATION:** Communication Electronics

**REFERENCE ID:** TEL/Q2500

**ALIGNED TO:** NCO-2015/Nil

**Brief Job Description:** Hand Soldering Technician is responsible for soldering/desoldering components on telecom boards, rework on boards to address soldering defects and undertake cleaning and inspection of boards.

**Personal Attributes:** This job requires the individual to have technical appreciation of the processes, eye for details and focused orientation to work. Individual needs to be process oriented and should have ability to work with concentration during the shift hours.

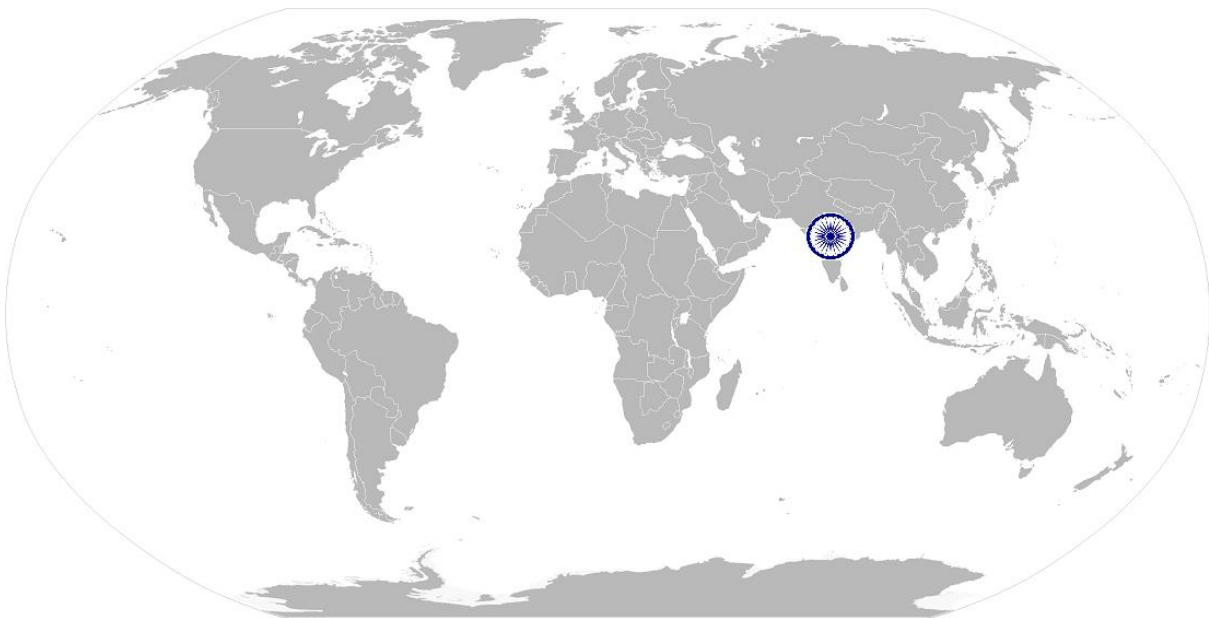
Job Details	<b>Qualifications Pack Code</b>		<b>TEL/Q2500</b>	
	<b>Job Role</b>		<b>Hand Soldering Technician Telecom Board</b>	
	<b>Credits (NSQF)</b>	<b>TBD</b>	<b>Version number</b>	<b>1.0</b>
	<b>Sector</b>	<b>Telecom</b>	<b>Drafted on</b>	<b>14/06/2017</b>
	<b>Sub-sector</b>	<b>Handset</b>	<b>Last reviewed on</b>	<b>10/11/2017</b>
	<b>Occupation</b>	<b>Communication Electronics</b>	<b>Next review date</b>	<b>10/11/2021</b>
	<b>NSQC Clearance on</b>		<b>DD/MM/YYYY</b>	

<b>Job Role</b>	<b>Hand Soldering Technician Telecom Board</b>
<b>Role Description</b>	Hand soldering technician handles soldering of components, rework, cleaning and inspection of telecom boards.
<b>NSQF level</b>	4
<b>Minimum Educational Qualifications*</b>	10+2
<b>Maximum Educational Qualifications*</b>	NA
<b>Minimum Entry Job Age</b>	18 Years
<b>Experience</b>	NIL
<b>Applicable National Occupational Standards (NOS)</b>	<p><b>Compulsory:</b></p> <ol style="list-style-type: none"> <li><a href="#">TEL/N2500 (High density hand soldering of components on telecom boards)</a></li> <li><a href="#">TEL/N2501 (Rework on defects and undertake selective soldering)</a></li> <li><a href="#">TEL/N2502 (Cleaning and inspection of telecom boards)</a></li> <li><a href="#">TEL/N2509 (Health and Safety)</a></li> </ol>
<b>Performance Criteria</b>	As described in the relevant OS units

Definitions	Keywords /Terms	Description
	Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
	Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
	Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
	Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
	Job Role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
	OS	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
	Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
	NOS	NOS are Occupational Standards which apply uniquely in the Indian context.
	Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
	Qualifications Pack	Qualifications Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
	Unit Code	Unit Code is a unique identifier for an Occupational Standard, which is denoted by an 'N'.
	Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.
	Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
	Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard.
	Organizational Context	Organizational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
	Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
	Core Skills or Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.

Acronym	Keywords/ Terms	Description
	CAD	Computer Aided Design
	BOM	Bill of Material
	PCB	Printed Circuit Board
	ICs	Integrated Circuits
	WI	Work Instruction
	WO	Work Order
	QA	Quality Assurance
	QC	Quality Control
	SHE	Safety, Health & Environment
	OHS	Occupational Health & Safety
	EMI	Electromagnetic Indusctio
	EMC	Electromagnetic Compatability
	IPC	Institute of Printed Circuits

# National Occupational Standard



## Overview

This unit is about skillsets required to undertake high density hand soldering of components on telecom boards as per the specifications.

**TEL/N2500**

**High Density Hand Soldering of Components on Telecom Boards**

<b>National Occupational Standard</b>	<b>Unit Code</b>	<b>TEL/N2500</b>
	<b>Unit Title (Task)</b>	<b>High density hand soldering of components on telecom boards</b>
	<b>Description</b>	This unit is about skills required to undertake high density hand soldering of components on telecom boards
	<b>Scope</b>	This unit/task covers the following: <ul style="list-style-type: none"> <li>• Preparing board and material/ components</li> <li>• Soldering of components on boards</li> </ul>
	<b>Performance Criteria(PC) w.r.t. the Scope</b>	
	<b>Element</b>	<b>Performance Criteria</b>
	<b>Preparing board and material/components</b>	<p>The user / individual on the job should be able to:</p> <p>PC1. read and understand basics of CAD specifications</p> <p>PC2. set the soldering jig/ fixture as per the work specifications</p> <p>PC3. gather all components to be soldered as per the specifications</p> <p>PC4. set the temperature as per the work and component specifications and measure the same using sensors</p> <p>PC5. select the correct solder bit and soldering wire for the given work</p> <p>PC6. clean solder bits, component leads and boards of any contamination</p> <p>PC7. clean the solder wire of any contamination</p> <p>PC8. select the correct flux as per specifications</p>
	<b>Soldering of components on boards</b>	<p>The user / individual on the job should be able to:</p> <p>PC9. undertake correct placement and orientation of components and demonstrate (amount of solder feeding, sufficient flux addition, correct positioning and vector speed of nozzle, no solder on gold fingers) while holding the equipment.</p> <p>PC10. regulate soldering temperature throughout the process so that it remains consistent.</p> <p>PC11. maintain solder stations as per the procedure (start and shut down procedures)</p>
	<b>Knowledge and Understanding (K)</b>	
	<b>A. Organizational Context</b> (Knowledge of the company /organization & its process relevant to area of responsibilities)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. process and procedures for drawing stores, drawings, specifications and their safe keeping</p> <p>KA2. risk and impact of not following defined procedures/work instructions and timeline</p> <p>KA3. escalation matrix for reporting identified incidents, troubles and/ or emergencies</p> <p>KA4. records to be maintained and implications of non-maintenance of the same</p> <p>KA5. SHE and OHS guidelines and regulations as per company's norms</p>

TEL/N2500

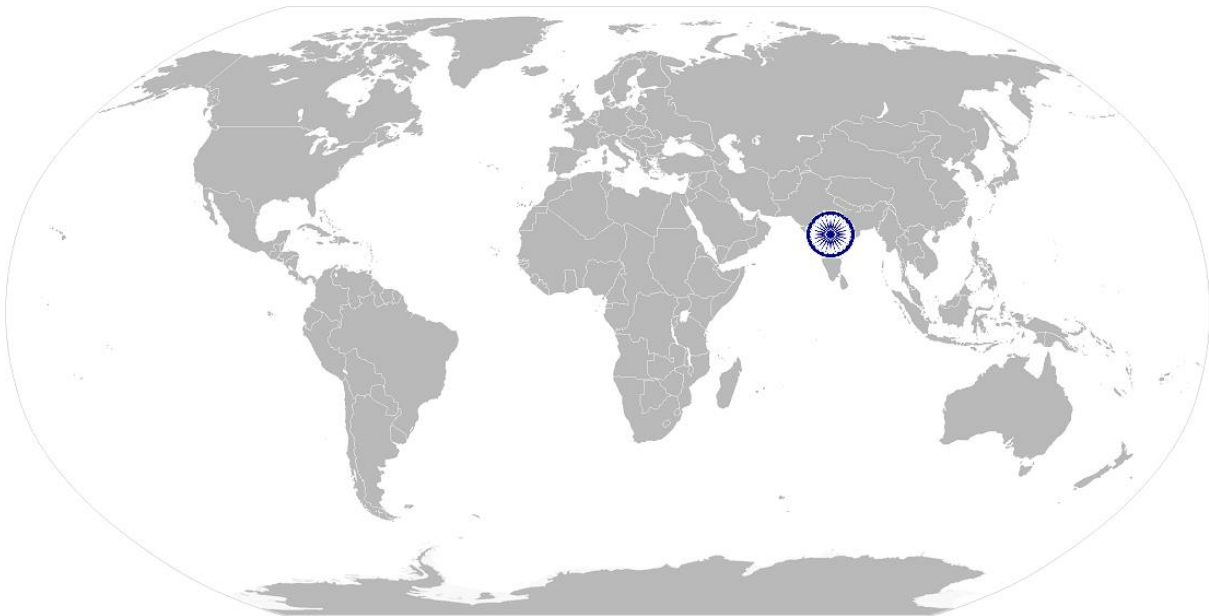
**High Density Hand Soldering of Components on Telecom Boards**

<p><b>B. Technical knowledge</b></p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. impact of contamination of PCBs, components and soldering material</p> <p>KB2. cleaning procedures and processes</p> <p>KB3. operational characteristics of soldering stations</p> <p>KB4. impact of temperature and humidity on the process</p> <p>KB5. reading of CAD specifications</p> <p>KB6. reading of component specifications</p> <p>KB7. reading of soldering component specifications</p>
<p><b>Skills (S) [Optional]</b></p>	
<p><b>A. Core skills/ Generic skills</b></p>	<p><b>Writing Skills</b></p> <p>Not applicable</p> <p><b>Reading Skills</b></p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. read technical literature/ parameters</p> <p>SA2. read and comprehend part/ pattern/ drawing numbers</p> <p>SA3. read and comprehend component parameters/ specifications</p> <p>SA4. read and understand manuals, requirement documents, health and safety instructions, memos, reports etc.</p> <p>SA5. read and comprehend/ understand material specifications</p> <p><b>Oral Communication (Listening and speaking skills)</b></p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA6. communicate with colleagues, peers and supervisor</p> <p>SA7. liaising and coordination skills</p>
<p><b>B. Professional skills</b></p>	<p><b>Decision Making</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. take decision on re-work; if required</p> <p><b>Plan and Organize</b></p> <p>The user/individual on the job needs to know and understand how to :</p> <p>SB2. setup work station environment as per the standards</p> <p>SB3. set-up soldering station</p> <p>SB4. set-up all soldering parameters</p> <p>SB5. establish component, flux and other parameter requirements</p> <p>SB6. adhere to workplace health and safety guidelines</p> <p><b>Customer Centricity</b></p> <p>Not applicable</p> <p><b>Problem Solving</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB7. interpret soldering temperature requirements</p> <p>SB8. interpret flux type and specifications requirements</p> <p>SB9. properly handle the components during operations and post completion processing</p> <p><b>Analytical Thinking</b></p> <p>Not applicable</p>

TEL/N2500

## High Density Hand Soldering of Components on Telecom Boards

	Critical Thinking
	Not applicable

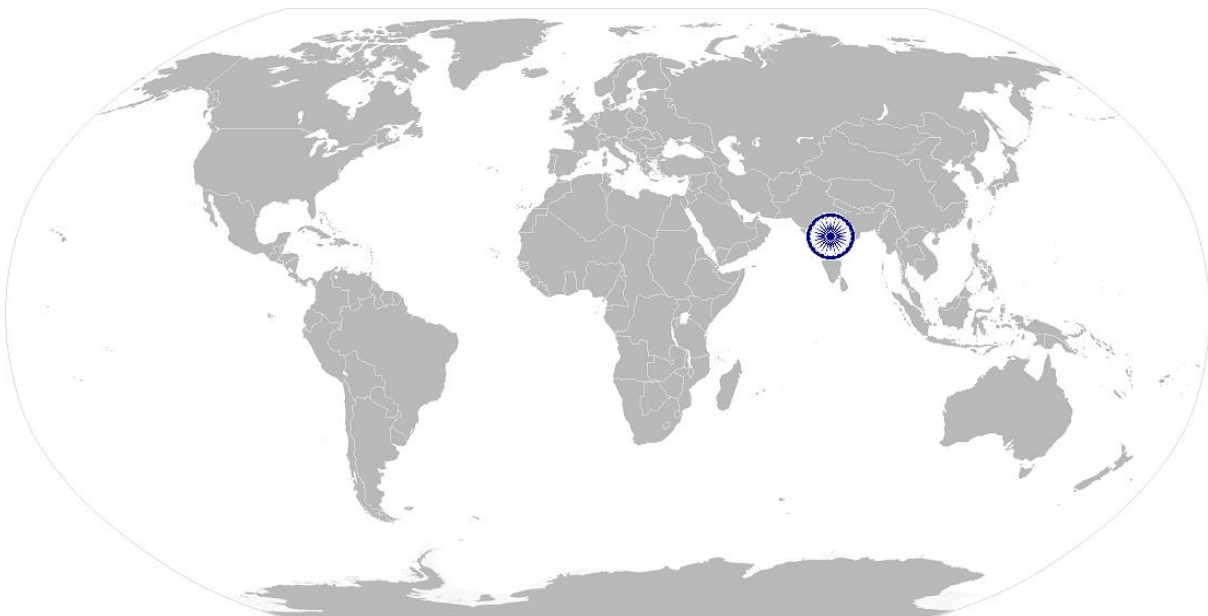




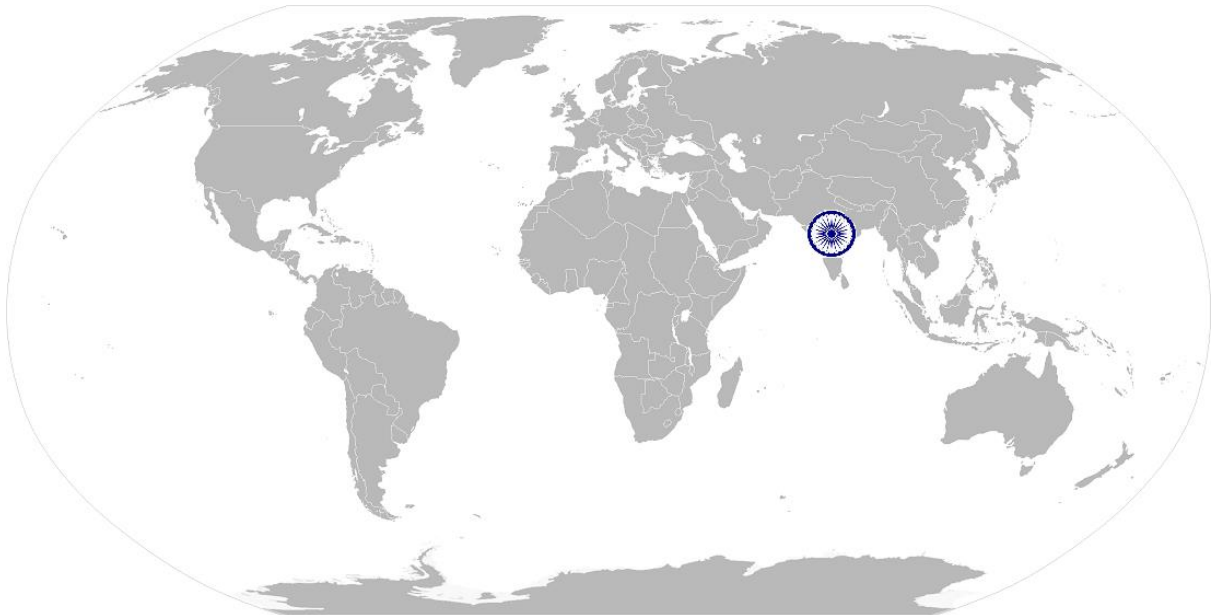
**TEL/N2500 High Density Hand Soldering of Components on Telecom Boards**

**NOS Version Control**

<b>NOS Code</b>	<b>TEL/N2500</b>		
<b>Credits (NSQF)</b>	<b>TBD</b>	<b>Version number</b>	<b>1.0</b>
<b>Industry</b>	<b>Telecom</b>	<b>Drafted on</b>	<b>14/06/2017</b>
<b>Industry Sub-sector</b>	<b>Handset</b>	<b>Last reviewed on</b>	<b>10/11/2017</b>
<b>Occupation</b>	<b>Communication Electronics</b>	<b>Next review date</b>	<b>10/11/2021</b>



# National Occupational Standard



## Overview

This unit is about rework on defects and selective soldering of components on telecom boards.

TEL/N2501

**Re-work on Defects and undertake Selective Soldering**

National Occupational Standard

<b>Unit Code</b>	TEL/N2501
<b>Unit Title (Task)</b>	Re-work on defects and undertake selective soldering
<b>Description</b>	This unit is about rework on defects and selective soldering of components on telecom boards.
<b>Scope</b>	This unit/task covers the following: <ul style="list-style-type: none"> <li>• Verification of completed board against specifications</li> <li>• Selective soldering and rework</li> </ul>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Verification of completed board against specifications</b>	<p>The user/ individual on the job should be able to:</p> <p>PC1. identify (from software library/ system) the correct CAD and BOM vis-à-vis the board to be verified</p> <p>PC2. map the on-board components vis-à-vis CAD specifications for correct placement and orientation and demonstrate the same</p> <p>PC3. ascertain values and specifications of the components vis-à-vis the drawings/ work order</p> <p>PC4. demonstrate ability to check defects (excess burr in component base, visible damages to the board and components, solder shorts, pin holes/ blow holes, spikes, peaks, gold figures and dry solder)</p> <p>PC5. analyse result of functional checks of the board</p>
<b>Selective soldering and re-work</b>	<p>The user/ individual on the job should be able to:</p> <p>PC6. identify/ mark all components to be reworked/resoldered</p> <p>PC7. ascertain if same component can be reused or source a replacement</p> <p>PC8. resolder as per the soldering process</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the company/ organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. work/ project management concepts and applications</p> <p>KA2. procedure for drawing components/ drawings</p> <p>KA3. escalation matrix for reporting non-compliance</p> <p>KA4. process and work records to be maintained</p> <p>KA5. SHE and OHS guidelines and regulations as per company's norms (precautions against solder fumes, basic electrical precautions)</p>
<b>B. Technical knowledge</b>	<p>The user /individual on the job needs to know and understand:</p> <p>KB1. soldering specifications</p> <p>KB2. proper soldering techniques</p> <p>KB3. identify and analyse defects</p> <p>KB4. use of correct tools and materials for rework/resoldering</p> <p>KB5. reading/verifying components under microscope to check correct placement and connectivity (no bend pins/legs etc)</p> <p>KB6. ESD precautions and hygiene</p>

TEL/N2501

## Re-work on Defects and undertake Selective Soldering

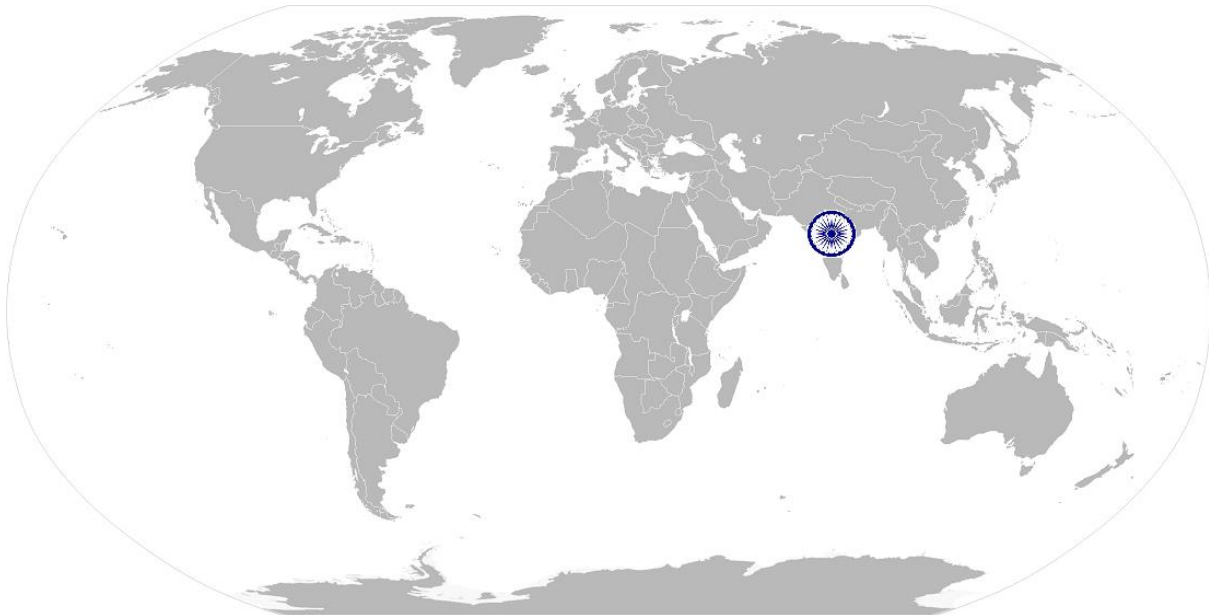
Skills (S) [Optional]	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	Not applicable
	<b>Reading Skills</b>
	The user/ individual on the job needs to know and understand how to: SA1. read work specifications, drawing and part/pattern numbers SA2. read and interpret technical literature/requirements SA3. technical recordings related to rework/resoldering SA4. read and understand manuals, workorders, health and safety instructions, memos,reports etc.
	<b>Oral Communication (Listening and speaking skills)</b>
	The user/ individual on the job needs to know and understand how to: SA5. communicate with colleagues, peers, management and stakeholders SA6. liaison and co-ordinate with team members, co-workers and superiors
<b>B. Professional Skills</b>	<b>Decision Making</b>
	The user/individual on the job needs to demonstrate ability to : SB1. decide on the board rework and component replacement based on the technical parameters and specifications
	<b>Plan and Organize</b>
	The user/individual on the job needs to know and understand how to : SB2. rework on telecom boards including re-soldering SB3. identify and gather all rework components and material SB4. correctly sequence rework SB5. schedule work/activities to comply to task time-frame SB6. identify soldering defects and non-compliances SB7. analyze defects reported during functional checks SB8. verify post rework/ re-soldering
	<b>Customer Centricity</b>
	Not applicable
	<b>Problem Solving</b>
	Not applicable
	<b>Analytical Thinking</b>
	Not applicable
<b>Critical Thinking</b>	
Not applicable	

**TEL/N2501**

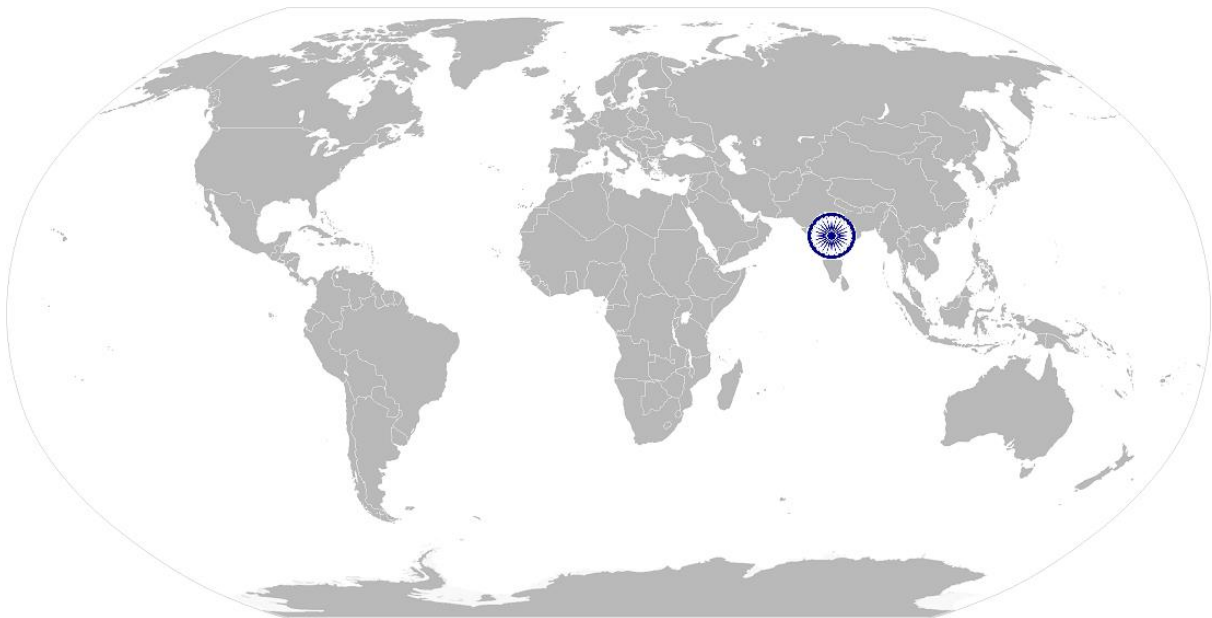
**Re-work on Defects and undertake Selective Soldering**

## NOS Version Control

<b>NOS Code</b>	<b>TEL/N2501</b>		
<b>Credits (NSQF)</b>	<b>TBD</b>	<b>Version number</b>	<b>1.0</b>
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<b>Industry Sub-sector</b>	<b>Handset</b>	<b>Last reviewed on</b>	<b>10/11/2017</b>
<b>Occupation</b>	<b>Communication Electronics</b>	<b>Next review date</b>	<b>10/11/2021</b>



# National Occupational Standard



## Overview

This unit is about cleaning and inspection of the completed (with all components and soldering) telecom boards as per the specified procedure and process.

TEL/N2502

**Cleaning and Inspection of Telecom Boards**

National Occupational Standard	<b>Unit Code</b>	TEL/N2502
	<b>Unit Title (Task)</b>	Cleaning and inspection of telecom boards
	<b>Description</b>	This unit is about cleaning and inspection of completed telecom boards.
	<b>Scope</b>	This unit/task covers the following: <ul style="list-style-type: none"> <li>• Cleaning of telecom boards</li> <li>• Inspection – quality checks and assurance</li> </ul>
	<b>Performance Criteria(PC) w.r.t. the Scope</b>	
	<b>Element</b>	<b>Performance Criteria</b>
	<b>Cleaning of telecom boards</b>	To be competent, the user/individual on the job must be able to: <p>PC1. demonstrate ability to clean the board from flux residues, white patches and/or powder, using correct and specified solvent</p> <p>PC2. operate vapor de-greaser (boil, rinse, vapourize and dry) to clean the boards</p> <p>PC3. demonstrate safe packaging and storage of telecom boards, using the specified wrapping material</p>
	<b>Inspection – quality checks and assurance</b>	To be competent, the user/individual on the job must be able to: <p>PC4. demonstrate ability to check telecom boards for any missing components, wrongly mounted components (location, value) or improper placement, vis-à-vis the specifications</p> <p>PC5. demonstrate ability to check the telecom boards for soldering workmanship and defects, proper placement of board identifier, adherence to specifications, conformal coatings</p> <p>PC6. demonstrate complaint handling and escalation processes</p> <p>PC7. undertake checks of shop floor with respect to adherence to the processes and parameters (temperature, humidity)</p>
	<b>Knowledge and Understanding (K)</b>	
	<b>A. Organizational Context</b> (Knowledge of the company/ organization and its process relevant to area of responsibilities)	The user/individual on the job needs to know and understand: <p>KA1. work/ project management concepts and applications</p> <p>KA2. risk and impact of not following defined procedures/ work instructions</p> <p>KA3. escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures, fire and power failures</p> <p>KA4. records to be maintained and implications of non-maintenance of the same</p> <p>KA5. SHE and OHS guidelines and regulations as per company’s norms</p>
<b>B. Technical Knowledge</b>	The user/individual on the job needs to know and understand: <p>KB1. use of cleaning chemicals/solvents for PCBs</p> <p>KB2. process of cleaning</p> <p>KB3. use of vapour de freezer equipment for PCB cleaning</p> <p>KB4. QA/QC parameters relating to the manual soldering</p> <p>KB5. IPC standards of soldering</p>	

TEL/N2502

## Cleaning and Inspection of Telecom Boards

Skills (S) [Optional]	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	The user/ individual on the job needs to know and understand how to: SA1. record performance/test results SA2. maintain proper records as per given format
	<b>Reading Skills</b>
	The user/ individual on the job needs to know and understand and comprehend: SA3. work related technical documentation and drawings SA4. process and guidelines to be followed
	<b>Oral Communication (Listening and Speaking Skills)</b>
	The user/ individual on the job needs to know and understand how to: SA5. communicate with stakeholders (co-workers, superiors) SA6. liason and co-ordinate with team members and supervisors
<b>B. Professional Skills</b>	<b>Decision Making</b>
	Not applicable
	<b>Plan and Organize</b>
	The user/individual on the job needs to know and understand how to : SB1. setup PCB cleaning environment SB2. apply health and safety guidelines to PCB cleaning SB3. analyse QA/QC and undertake corrective setting SB4. undertake cleaning of PCBs SB5. ascertain parameters and operational characteristics of jigs, equipment and process parameters SB6. understand QA/QC parameters and implications of their non-adherence
	<b>Customer Centricity</b>
	Not applicable
	<b>Problem Solving</b>
	Not applicable
	<b>Analytical Thinking</b>
	Not applicable
<b>Critical Thinking</b>	
Not applicable	

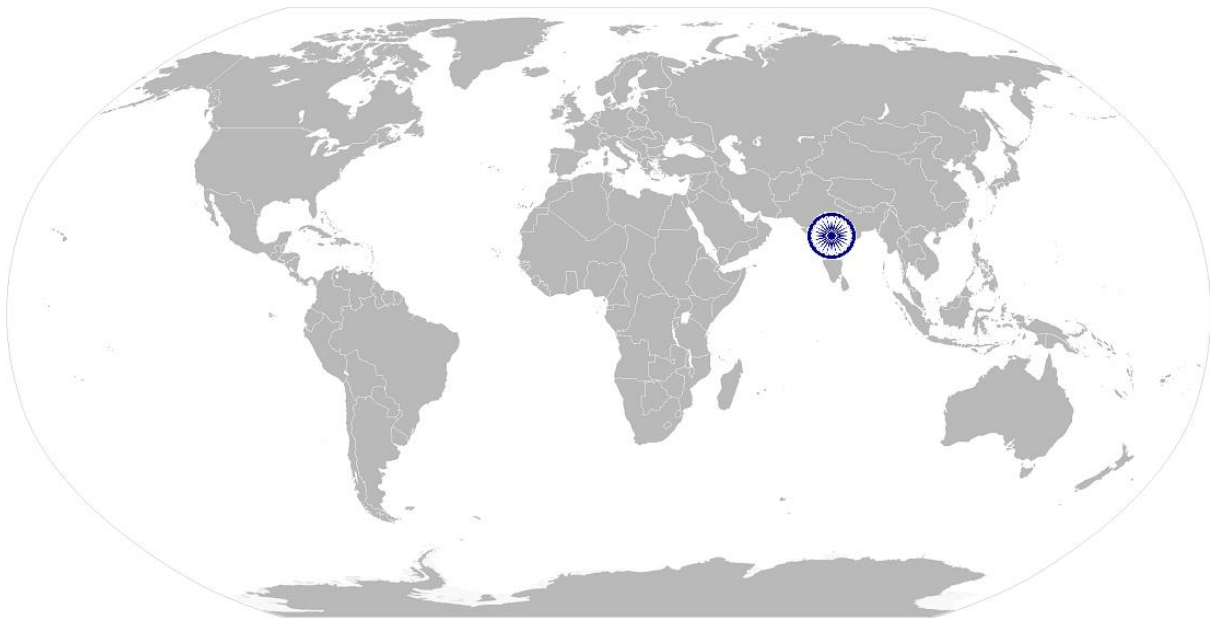


TEL/N2502

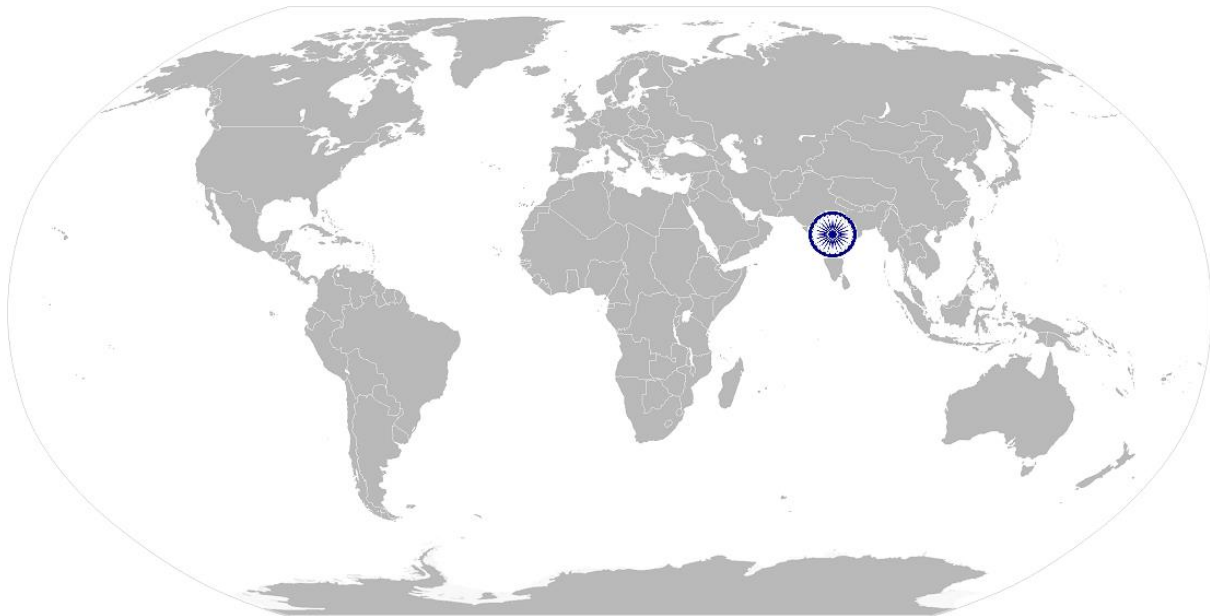
## Cleaning and Inspection of Telecom Boards

### NOS Version Control

NOS Code	TEL/N2502		
Credits (NSQF)	TBD	Version number	1.0
Industry	Telecom	Drafted on	14/06/2017
Industry Sub-sector	Handset	Last reviewed on	10/11/2017
Occupation	Communication Electronics	Next review date	10/11/2021



# National Occupational Standard



## Overview

This unit is about monitoring the working environment and making sure it meets requirements for health, safety and security.

National Occupational Standard	<b>Unit Code</b>	TEL/N2509
	<b>Unit Title (Task)</b>	Health and safety
	<b>Description</b>	This unit is about monitoring the working environment and making sure it meets requirements for health, safety and security.
	<b>Scope</b>	<p>This unit/ task covers the following:</p> <p>Health &amp; safety compliance and emergency procedures</p> <ul style="list-style-type: none"> <li>• hazards</li> <li>• fire</li> <li>• accident</li> <li>• site emergency</li> </ul>
	<b>Performance Criteria(PC) w.r.t. the Scope</b>	
	<b>Element</b>	<b>Performance Criteria</b>
	<b>Health &amp; safety compliance and emergency procedures</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. ensure that work is carried out in accordance with the laid down safety, security policies and procedures of the organization</p> <p>PC2. ensure that site is assessed for safety and emergency readiness compliance as per company's guidelines</p> <p>PC3. ensure electrical safety compliances and EMI/EMC hygiene requirements are met as per the guidelines</p> <p>PC4. identify and correct any hazards that you can deal with safely, competently and within the limits of your authority</p> <p>PC5. report any hazards that you are not competent to deal with to the relevant person in line with organizational procedures and warn other people who may be affected</p> <p>PC6. follow your organizations's emergency procedures promptly, calmly and efficiently</p> <p>PC7. identify and recommend opportunities for improving health, safety, security to the designated person</p> <p>PC8. complete any health and safety records legibly and accurately</p>
	<b>Knowledge and Understanding (K)</b>	
	<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. legislative requirements and organizations procedures for health, safety and security and role and responsibilities in relation to this</p> <p>KA2. what is meant by hazard, including the different types of health and safety hazards that can be found in the workplace</p> <p>KA3. how and when to report hazards</p> <p>KA4. limits of yours responsibility for dealing with hazards</p> <p>KA5. your organization's emergency procedures for different emergency situations and the importance of following these</p> <p>KA6. the importance of maintaining high standards of health, safety and security</p> <p>KA7. implications that any non – compliance with health, safety and security may have on individuals and the organization</p>

TEL/N2509

## Health and Safety

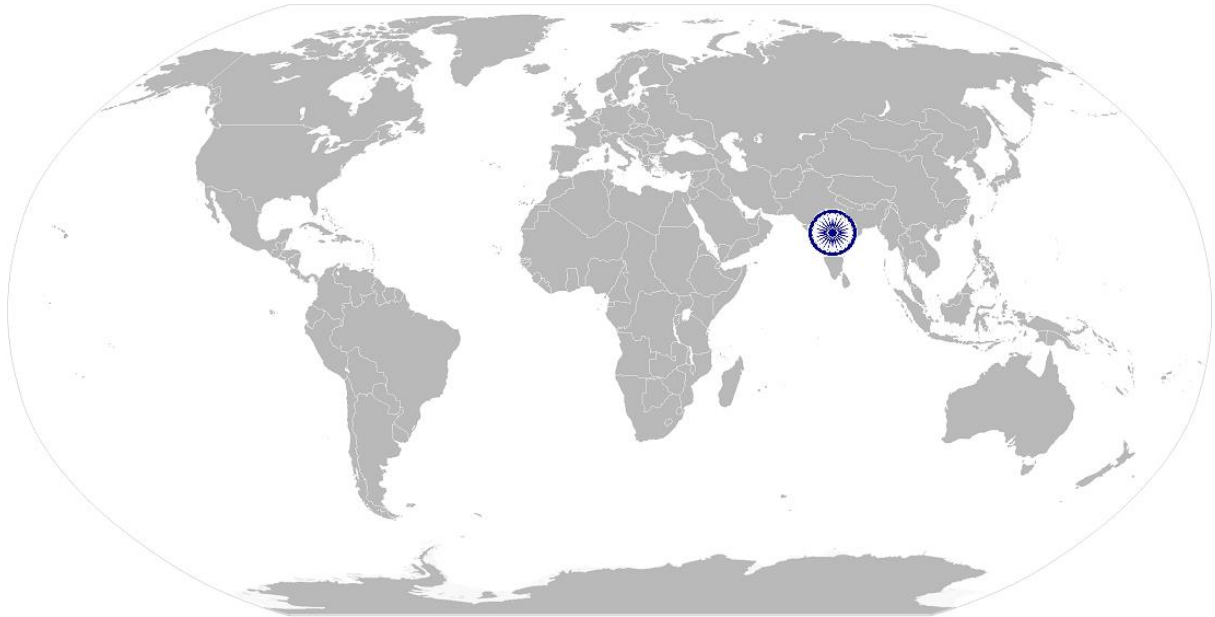
<p><b>B. Technical Knowledge</b></p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. different types of breaches in health, safety and security and how and when to report these</p> <p>KB2. evacuation procedures for works and visitors</p> <p>KB3. how to summon medical assistance and the emergency services, where necessary</p> <p>KB4. how to use the health, safety and accident reporting procedures and the importance of these</p> <p>KB5. government agencies in the area of safety, health and security and their norms and services</p> <p>KB6. knows and understands the MSDS of any chemicals used in soldering activity</p>
<p><b>Skills (S) [Optional]</b></p>	
<p><b>A. Core Skills/ Generic Skills</b></p>	<p><b>Writing Skills</b></p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. complete accurate well written work with attention to detail</p> <p><b>Reading Skills</b></p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA2. read instructions, guidelines, procedures rules and service level agreements</p> <p><b>Oral Communication (Listening and Speaking Skills)</b></p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA3. listen effectively and orally communicate information accurately</p>
<p><b>B. Professional Skills</b></p>	<p><b>Decision Making</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. make decisions on suitable course location</p> <p><b>Plan and Organize</b></p> <p>The user/individual on the job needs to know and understand how to :</p> <p>SB2. plan and organize your work to meet health, safety and security requirements</p> <p><b>Customer Centricity</b></p> <p>Not applicable</p> <p><b>Problem Solving</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB3. apply problem solving approaches in different situations</p> <p><b>Analytical Thinking</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB4. analyze data and activities</p> <p><b>Critical Thinking</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB5. apply balanced judgments to different situations</p> <p>SB6. apply, analyze and evaluate the information gathered from observation, experience, reasoning or communication, as guide to thought and action</p>

TEL/N2313

Health and Safety

## NOS Version Control

<b>NOS Code</b>	<b>TEL/N2509</b>		
<b>Credits (NSQF)</b>	<b>TBD</b>	<b>Version number</b>	<b>1.0</b>
<b>Industry</b>	<b>Telecom</b>	<b>Drafted on</b>	<b>14/06/2017</b>
<b>Industry Sub-sector</b>	<b>Handset</b>	<b>Last reviewed on</b>	<b>10/11/2017</b>
<b>Occupation</b>	<b>Communication Electronics</b>	<b>Next review date</b>	<b>10/11/2021</b>

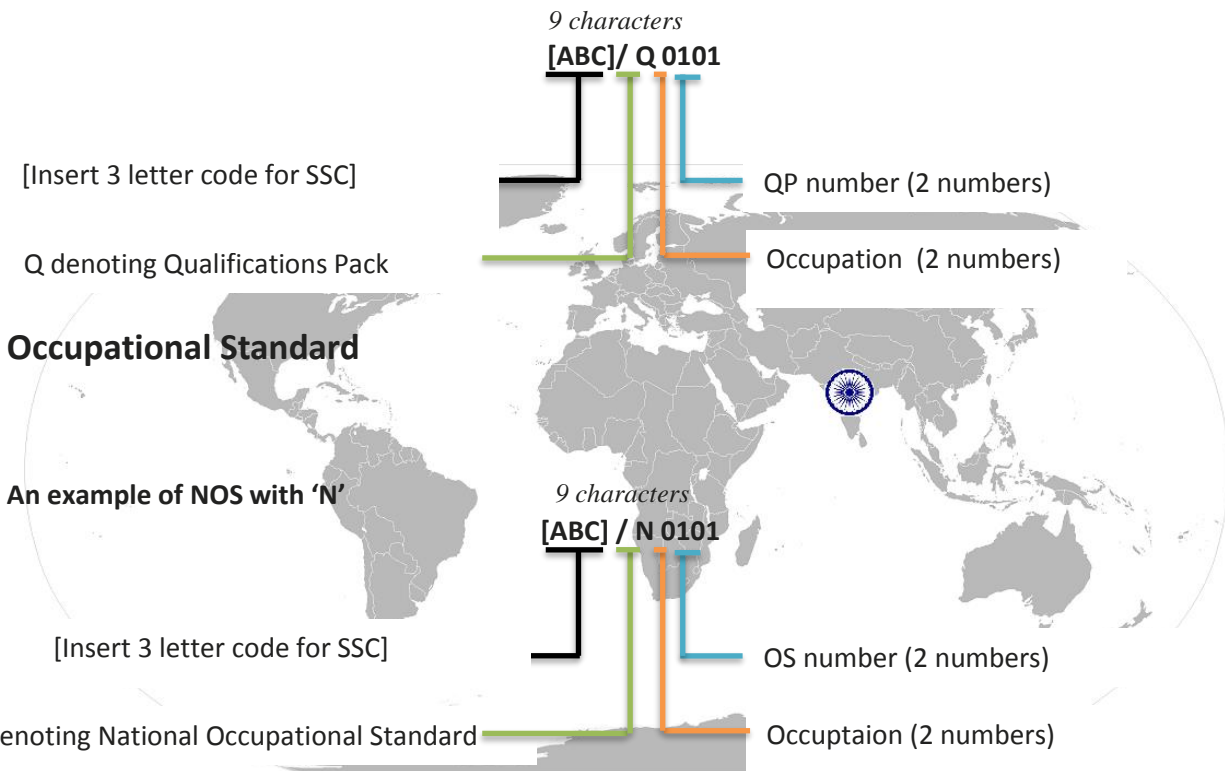


Qualification Pack for Hand Soldering Technician Telecom Board

Annexure

**Nomenclature for QP and NOS**

**Qualifications Pack**



*Qualification Pack for Hand Soldering Technician Telecom Board*

The following acronyms/codes have been used in the nomenclature above:

Sub-sector	Range of Occupation numbers
Service	01- 20
Handset	21 – 40
Passive Infra	41 – 60
Network managed	61 – 80

Sequence	Description	Example
Three letters	Industry name	TEL
Slash	/	/
Next letter	Whether QP or NOS	Q
Next two numbers	Occupation code	01
Next two numbers	OS number	01

*Qualification Pack- Hand Soldering Technician Telecom Board*

**CRITERIA FOR ASSESSMENT OF TRAINEES**

**Job Role** : Hand Soldering Technician Telecom Board  
**Qualification Pack** : TEL/Q2500  
**Sector Skill Council** : Telecom Sector Skill Council

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory and skill practical part for each candidate at each examination/ training center.
5. To pass the Qualification Pack, every trainee should score a minimum 70% of aggregate marks to successfully clear the assessment.
6. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Compulsory NOS			Total Marks: 400		Marks Allocation	
Assessable Outcomes	Assessment criteria for outcomes	Total Marks	Out of	Theory	Skills Practical	
TEL/N2500 Preparing board and material/ components	PC1. read and understand basics of CAD specifications	100	8	5	3	
	PC2. set the soldering jig/ fixture as per the work specifications		9	4	5	
	PC3. gather all components to be soldered as per the specifications		8	2	6	
	PC4. set the temperature as per the work and component specifications and measure the same using sensors		9	2	7	
	PC5. select the correct solder bit and soldering wire for the given work		10	4	6	
	PC6. clean solder bits, component leads and boards of any contamination		9	0	9	
	PC7. clean the solder wire of any contamination		9	0	9	
	PC8. select the correct flux as per specifications		10	5	5	
Soldering of components on boards	PC9. undertake correct placement and orientation of components and demonstrate (amount of solder feeding, sufficient flux addition, correct positioning and vector speed of nozzle, no solder on gold figures) while holding the equipment.	100	12	4	8	
	PC10. regulate soldering temperature throughout the process so that it remains consistent		8	2	6	
	PC11. maintain solder stations as per the procedure (start and shut down procedures)		8	2	6	
	<b>Total</b>	<b>100</b>	<b>100</b>	<b>30</b>	<b>70</b>	
TEL/N2501 Verification of completed board against specification	PC1. draw (from software library/ system) the correct CAD and BOM vis-à-vis the board to be verified	100	10	5	5	
	PC2. map the on-board components vis-à-vis CAD specifications for correct placement and orientation and demonstrate the same specifications for correct placement and orientation		10	5	5	
	PC3. ascertain values and specifications of the components vis-à-vis the drawings/ work order		16	7	9	



*Qualification Pack- Hand Soldering Technician Telecom Board*

	PC4. demonstrate ability to check defects (excess burr in component base, visible damages to the board and components, solder shorts, pin holes/ blow holes, spikes, peaks, gold figures and dry solder)		14	6	8
	PC5. analyse result of functional checks of the board		15	9	6
Selective soldering and rework	PC6. identify/ mark all components to be reworked/ resoldered		10	5	5
	PC7. ascertain if the same component can be re-used or source a replacement		15	6	9
	PC8. resolder as per the soldering process		10	5	5
	<b>Total</b>	<b>100</b>	<b>100</b>	<b>48</b>	<b>52</b>
TEL/N2502 Cleaning of telecom boards	PC1. demonstrate ability to clean the board from flux residues, white patches and/ or powder, using correct and specified solvent	100	15	5	10
	PC2. operate vapour de-greaser (boil, rinse, vapourise and dry) to clean the boards		15	7	8
	PC3. demonstrate safe packaging and storage of telecom boards, using the specified wrapping material		15	4	11
Inspection – QA/QC	PC4. demonstrate ability to check telecom boards for any missing components, wrongly mounted components (location, value) or improper placement, vis-à-vis the specifications		12	7	5
	PC5. demonstrate ability to check the telecom boards for soldering workmanship and defects, proper placement of board identifier, adherence to specifications, conformal coatings		13	6	7
	PC6. demonstrate complaint handling and escalation processes		15	8	7
	PC7. undertake checks of shopfloor with respect to adherence to the processes and parameters (temperature, humidity)		15	7	8
	<b>Total</b>	<b>100</b>	<b>100</b>	<b>44</b>	<b>56</b>
TEL/N2509 Health & safety compliance and emergency procedures	PC1. ensure that work is carried out in accordance with the laid down safety, security policies and procedures of the organization	100	10	6	4
	PC2. ensure that site is assessed for safety and emergency readiness compliance as per company's guidelines		12	6	6
	PC3. ensure electrical safety compliances and EMI/EMC hygiene requirements are met as per the guidelines		15	9	6
	PC4. identify and correct any hazards that you can deal with safely, competently and within the limits of your authority		15	10	5
	PC5. report any hazards that you are not competent to deal with to the relevant person in line with organizational procedures and warn other people who may be affected		12	7	5
	PC6. follow your organizations' emergency procedures promptly, calmly and efficiently		12	6	6
	PC7. identify and recommend opportunities for improving health, safety, security to the designated person		14	8	6
	PC8. complete any health and safety records legibly and accurately		10	5	5
	<b>Total</b>	<b>100</b>	<b>100</b>	<b>57</b>	<b>43</b>