



Model Curriculum

QP Name: Hand Soldering Technician - Telecom Boards

QP Code: TEL/Q2500

Version: 4.0

NSQF Level: 3.0

Model Curriculum Version: 2.0

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Training Parameters

Sector	Telecom
Sub-Sector	Handset
Occupation	Communication Electronics
Country	India
NSQF Level	3.0
Aligned to NCO/ISCO/ISIC Code	NCO-2015/3114.1404
Minimum Educational Qualification and Experience	10th grade pass OR 8th grade pass with 3 Years of experience in communication electronics OR Previous relevant Qualification of NSQF Level 2.5 with 1.5 years of experience in communication electronics
Pre-Requisite License or Training	NA
Minimum Job Entry Age	NA
Last Reviewed On	08-05-2025
Next Review Date	30-04-2028
NSQC Approval Date	08-05-2025
QP Version	4.0
Model Curriculum Creation Date	22-03-2025
Model Curriculum Valid Up to Date	30-04-2028
Model Curriculum Version	2.0
Minimum Duration of the Course	450 Hours
Maximum Duration of the Course	450 Hours

Program Overview

This section summarises the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills to:

- Explain the process of high-density hand soldering of components on telecom boards while ensuring quality, safety, and efficiency.
- Describe the methods for reworking defects and performing selective soldering on telecom boards in compliance with industry standards.
- Discuss the procedures for cleaning and inspecting telecom boards to ensure reliability and adherence to quality norms.
- Explain sustainability practices in telecom production and assembly, including waste segregation, recycling, and compliance with environmental regulations.
- Discuss the Employability and Entrepreneurship Skills.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration (Hours)	Practical Duration (Hours)	On-the-Job Training Duration (Mandatory) (Hours)	On-the-Job Training Duration (Recommended) (Hours)	Total Duration (Hours)
TEL/N2500: High-Density Hand Soldering of Components on Telecom Boards NOS Version No.: 5.0 NSQF Level: 3.0	60:00	50:00	40:00	00:00	150:00
Module 1: Introduction to the Sector and the job role of Hand Soldering Technician - Telecom Boards	05:00	00:00	00:00	00:00	05:00
Module 2: Preparing Telecom Boards for Soldering	25:00	20:00	10:00	00:00	55:00
Module 3: Performing High-Density Hand Soldering on Telecom Boards	30:00	30:00	30:00	00:00	90:00
TEL/N2501: Rework on Defects and Undertake Selective Soldering NOS Version No.: 4.0 NSQF Level: 3.0	30:00	70:00	50:00	00:00	150:00
Module 4: Verification of Telecom Boards and Identification of Defects	15:00	35:00	25:00	00:00	75:00

Module 5: Selective Soldering and Rework of Defective Components	15:00	35:00	25:00	00:00	75:00
TEL/N2502: Cleaning and Inspection of PCBs NOS Version No.: 5.0 NSQF Level: 4.0	20:00	40:00	30:00	00:00	90:00
Module 6: Cleaning and Quality Inspection of PCBs	20:00	40:00	30:00	00:00	90:00
TEL/N9107: Follow sustainability practices in telecom production and assembly line processes NOS Version No.: 1.0 NSQF Level: 4.0	10:00	20:00	00:00	00:00	30:00
Module 7: Sustainable Practices in Telecom Production and Assembly	10:00	20:00	00:00	00:00	30:00
DGT/VSQ/N0101: Employability Skills (30 Hours) NOS Version No.: 1.0 NSQF Level: 2	30:00	00:00	00:00	00:00	30:00
Module 8: Employability Skills (30 Hours)	30:00	00:00	00:00	00:00	30:00
Total Duration	150:00	180:00	120:00	00:00	450:00

Module Details

Module 1: Introduction to the Sector and the job role of Hand Soldering Technician - Telecom Boards

Mapped to TEL/N2500, v5.0

Terminal Outcomes:

- Explain the importance of Telecom Sector.
- Discuss the roles and responsibilities of a Hand Soldering Technician - Telecom Boards.

Duration (in hours): 05:00	Duration (in hours): 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Explain the significance of the telecom sector in modern communication and economic development. • Elucidate the key skills and technical expertise required for a Hand Soldering Technician - Telecom Boards. • Describe the challenges faced in the soldering and de-soldering components, reworking defects, and cleaning and inspecting telecom boards. • Describe the different kinds of diodes – switch and rectifier, transistors – amplifier and switch and logic gates • Describe the functions of electronic circuits (transmitters, receivers, switches, power supplies, amplifiers, multiplexers, couplers, registers, memory and all RF circuits) in different telecom equipment. • Discuss the roles and responsibilities of a Hand Soldering Technician - Telecom Boards.	-
Classroom Aids	
Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
Nil	

Module 2: Preparing Telecom Boards for Soldering

Mapped to TEL/N2500, v5.0

Terminal Outcomes:

- Explain the preparatory steps required before soldering, including interpreting CAD specifications, setting up fixtures, and selecting appropriate soldering materials.
- Describe the importance of maintaining cleanliness, controlling temperature, and following safety guidelines to ensure high-quality soldering results.

Duration (in hours): 15:00	Duration (in hours): 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Explain the importance of interpreting CAD specifications to identify soldering points, pad layouts, and component placements. • Describe the setup process for soldering jigs, fixtures, and workstations to ensure stability during soldering. • Discuss the selection criteria for soldering tools, including soldering bits, flux types, and solder wire diameters based on application requirements. • Elucidate the impact of contamination on soldering quality and the need for proper cleaning of PCB surfaces, soldering tips, and component leads. • Explain the significance of temperature control in soldering stations and methods to prevent overheating or cold solder joints. • Enlist the safety, health, and environmental (SHE) guidelines related to handling soldering materials, including proper ventilation and personal protective equipment (PPE). • Describe the role of electrostatic discharge (ESD) protection in preventing damage to sensitive telecom components. • Discuss documentation and record-keeping requirements related to soldering preparation, including tracking materials used and maintaining quality checklists.	• Demonstrate how to interpret CAD drawings to locate soldering points, pad connections, and component placements. • Show how to set up and align soldering jigs and fixtures to ensure component stability and precision during soldering. • Demonstrate the process of selecting appropriate soldering materials, including flux, solder wire, and soldering tips for different applications. • Show how to clean soldering bits, PCB surfaces, and component leads to prevent contamination and ensure strong solder joints. • Demonstrate the proper calibration and temperature setting of a soldering station to match the requirements of different telecom components. • Show how to implement ESD protection measures, including the use of anti-static mats, wrist straps, and grounding techniques. • Demonstrate safe handling and storage of soldering materials following SHE guidelines. • Show how to document and maintain records of soldering material usage, cleaning procedures, and equipment calibration.
Classroom Aids	
Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films	

Tools, Equipment and Other Requirements

Antistatic Gloves and Mats, PCB Board, PCB Holder, Cleaning Brush, Cleaning Solution (E.G., IPA - Isopropyl Alcohol), Tweezers, Multimeter, Jumper Wire, Nose Plier, and Screwdrivers

Module 3: Performing High-Density Hand Soldering on Telecom Boards

Mapped to TEL/N2500, v5.0

Terminal Outcomes:

- Describe the process of positioning and aligning components accurately on telecom boards to ensure proper soldering connections.
- Explain industry standards, soldering techniques, and defect identification methods to maintain high-quality solder joints.

Duration (in hours): 30:00	Duration (in hours): 40:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Explain the importance of precise component alignment in high-density telecom boards to ensure functional connections. • Describe different soldering techniques, including drag soldering, point-to-point soldering, and controlled heat application, to achieve uniform joints. • Discuss the correct use of flux in soldering, its types, and its role in preventing oxidation and improving solder flow. • Elucidate the significance of maintaining optimal soldering temperature to avoid overheating and cold joints. • Enlist common soldering defects, such as cold joints, solder bridges, and excess solder, along with their causes. • Describe corrective actions to fix defects, including reflow techniques, solder wick usage, and desoldering pumps. • Discuss industry standards for soldering quality (IPC-A-610) and their role in ensuring telecom board reliability. • Explain the role of magnification tools in inspecting solder joints for defects and compliance with industry standards. • Describe preventive maintenance practices for soldering stations, including tip cleaning, calibration, and replacement schedules. • Discuss safety precautions while soldering, including ventilation requirements, PPE usage, and handling of lead-based and lead-free solder.	• Demonstrate the process of aligning and placing components accurately on high-density telecom boards before soldering. • Show how to apply the correct amount of solder and flux to achieve optimal solder joints without bridging. • Demonstrate controlled heat application techniques to prevent overheating and thermal stress on components. • Show how to use high-density soldering methods, such as drag soldering and point-to-point soldering, to maintain uniformity. • Demonstrate the identification of common soldering defects using visual inspection and magnification tools. • Show how to correct soldering defects such as cold joints, solder bridges, and excessive solder using desoldering tools. • Demonstrate the inspection of solder joints using IPC-A-610 standards and checking for compliance. • Show how to perform preventive maintenance on soldering stations, including tip cleaning and equipment calibration. • Demonstrate safe handling and disposal of soldering materials following industry safety guidelines.

Classroom Aids

Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films

Tools, Equipment and Other Requirements

Soldering Iron, Solder Wire, Soldering Flux, Hot Air Blower, DC Power Supply, Rework Station, Wrist Strap, and PCB Holder

Module 4: Verification of Telecom Boards and Identification of Defects

Mapped to TEL/N2501, v4.0

Terminal Outcomes:

- Explain the process of retrieving and interpreting CAD layouts and Bill of Materials (BOM) for verifying telecom board assemblies.
- Describe quality control methods, defect identification techniques, and functional testing procedures to ensure compliance with industry standards.

Duration (in hours): 15:00	Duration (in hours): 30:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Explain the role of CAD layouts and Bill of Materials (BOM) in verifying telecom board assemblies. • Describe methods to compare component placement, orientation, and values against given specifications. • Discuss common soldering defects, including solder bridges, blowholes, spikes, dry solder joints, and gold finger contamination. • Elucidate the industry standards and best practices for telecom board soldering and rework. • Enlist various defect identification techniques such as visual inspection, X-ray inspection, and Automated Optical Inspection (AOI). • Explain quality control procedures used in PCB assembly to ensure functional and defect-free boards. • Describe functional testing methods and tools used to assess the performance of assembled boards. • Discuss documentation and reporting procedures for recording defect findings and preparing quality reports. • Explain Occupational Health and Safety (OHS) regulations related to telecom board inspection and defect rectification.	• Demonstrate how to retrieve and interpret CAD layouts and Bill of Materials (BOM) for telecom board verification. • Show how to inspect telecom boards for proper component placement, alignment, and orientation. • Demonstrate the use of magnification tools to identify soldering defects such as solder bridges, blowholes, and dry solder joints. • Show how to perform functional testing of assembled telecom boards using appropriate testing tools. • Demonstrate defect identification using different inspection techniques, including visual checks, X-ray, and AOI. • Show how to document defect findings and prepare quality reports based on inspection results. • Demonstrate compliance with OHS guidelines while handling telecom boards and performing inspections.
Classroom Aids	
Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films	

Tools, Equipment and Other Requirements
Multimeter, Black/White Board, Opener, and Tweezers

Module 5: Selective Soldering and Rework of Defective Components

Mapped to TEL/N2501, v4.0

Terminal Outcomes:

- Describe the process of identifying, marking, and categorizing defective components for rework or replacement.
- Explain selective soldering techniques, de-soldering methods, and quality verification procedures to ensure compliance with industry standards.

Duration (in hours): 15:00	Duration (in hours): 30:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Explain the steps involved in marking and categorizing defective components for rework or replacement. • Describe criteria for determining whether components can be reused or require replacement. • Elucidate proper desoldering techniques for removing faulty joints without damaging the PCB. • Discuss selective soldering techniques, including temperature control, solder flow management, and flux application. • Enlist different soldering and desoldering tools, such as rework stations, soldering irons, and vacuum desoldering pumps. • Explain the importance of maintaining proper soldering station settings to ensure uniform solder joints. • Describe verification methods for reworked components using magnification tools and testing procedures. • Discuss ESD control measures and best practices for preventing damage to sensitive electronic components. • Explain industry protocols for handling lead-free and lead-based soldering materials and their compatibility with components. • Describe work process documentation and the escalation matrix for defect reporting.	• Demonstrate how to identify, mark, and categorize defective components for rework or replacement. • Show how to safely remove defective components using proper desoldering techniques. • Demonstrate selective soldering techniques while maintaining precise temperature control and solder flow. • Show how to inspect reworked components under a microscope for quality assurance. • Demonstrate safe handling of soldering stations, desoldering tools, and rework stations. • Show how to maintain proper documentation of rework, including defect reports and corrective actions taken. • Demonstrate compliance with ESD safety precautions while handling telecom boards and components.
Classroom Aids	
Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films	

Tools, Equipment and Other Requirements

Soldering Iron, Soldering Flux, Hot Air Blower, Rework Station, Solder Wire, Tweezers, Nose Plier, and Multimeter

Module 6: Cleaning and Quality Inspection of PCBs

Mapped to TEL/ N2502, v5.0

Terminal Outcomes:

- Explain the process and importance of cleaning PCBs after assembly.
- Describe the key quality checks and assurance measures for PCBs.

Duration (in hours): 20:00	Duration (in hours): 40:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Explain the principles of work/project management and their application in PCB inspection. • Discuss the risks and consequences of non-compliance with defined procedures. • Describe the escalation matrix for reporting incidents such as system failures, contamination issues, and non-conformities. • Elucidate the importance of record-keeping and the potential consequences of poor documentation. • Explain the Safety, Health, and Environment (SHE) and Occupational Health and Safety (OHS) regulations as per company and industry standards. • Describe the properties, usage, and handling of cleaning chemicals/solvents used for PCB cleaning. • Discuss the principles and techniques of PCB cleaning, including solvent-based and ultrasonic methods. • Explain the operation and maintenance of cleaning equipment such as vapor de-greasers and ultrasonic cleaners. • Determine the key quality control and quality assurance parameters related to PCB inspection. • Discuss IPC and industry standards for soldering, component placement, and PCB integrity. • Describe ESD-safe handling procedures and their impact on PCB reliability.	• Demonstrate how to clean PCBs to remove flux residues, white patches, and other contaminants using specified solvents and cleaning agents. • Show how to operate a vapor de-greaser, ultrasonic cleaner, and other industry-recommended equipment for effective PCB cleaning. • Demonstrate controlled drying methods to prevent damage and contamination of PCBs. • Show how to package and store cleaned PCBs using electrostatic discharge (ESD)-safe materials and procedures. • Demonstrate how to check PCBs for missing, wrongly mounted, or misaligned components as per specifications and the bill of materials (BOM). • Show how to inspect soldering quality, including workmanship, joint integrity, and adherence to IPC standards. • Demonstrate the verification process for PCB identifiers, conformal coatings, and compliance with customer or regulatory requirements. • Show how to identify defects such as cold solder joints, bridging, and insufficient solder, and take corrective action. • Demonstrate how to identify and segregate functional and defective PCBs. • Show how to document findings and escalate non-conformities as per established reporting protocols. • Demonstrate routine maintenance of SMT equipment to ensure optimal functioning.

	Show how to conduct routine shop floor audits to ensure adherence to process parameters, including temperature and humidity control.
Classroom Aids	
Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
PCB Cleaning Solution (IPA), PCB Cleaning Machine, Static Level Meter, Humid/Moist Control Desiccant Dry Box (Adjustable / Auto), High Density Press Fit Connector Assembler/Tester, In-Circuit Testing Machine, Master Design File, Micro Clean Room, Document Pads/Files, Assembly Line Protector	

Module 7: Sustainable Practices in Telecom Production and Assembly

Mapped to TEL/N9107, v1.0

Terminal Outcomes:

- Explain the process of identifying and segregating recyclable, refurbishable, and hazardous telecom components.
- Discuss the importance of following green manufacturing and sustainable assembly practices in telecom production.
- Describe the correct procedures for disposing of and recycling waste in telecom assembly lines.
- Determine the key environmental and sustainability regulations that must be complied with in telecom manufacturing.

Duration (in hours): 10:00	Duration (in hours): 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Explain the organization's sustainability policies and goals. • Elucidate the key aspects of EPR guidelines, ISO 14001, and e-waste disposal laws. • Discuss the methods for identifying recyclable and hazardous components in telecom production. • Describe green manufacturing practices, including energy-efficient tools, lead-free soldering, and automation. • Explain the proper handling, storage, and disposal methods for e-waste. • Determine techniques for reducing material wastage without impacting production quality. • Discuss the safe and responsible handling of hazardous and non-hazardous materials in telecom manufacturing. • Describe environmental impact assessment techniques for telecom production. • Explain the documentation requirements for sustainability audits and compliance tracking.	• Demonstrate how to inspect, categorize, and store telecom components such as PCBs, cables, batteries, and plastic casings for appropriate processing, ensuring compliance with EPR guidelines. • Show how to maintain an inventory of recyclable and hazardous materials while tracking waste management and reporting improper disposal practices. • Demonstrate the use of energy-efficient equipment, tools, and automated systems to reduce carbon footprint and optimize material, water, and electricity consumption. • Show how to follow low-emission soldering and lead-free assembly processes while ensuring compliance with ISO 14001 (Environmental Management System). • Demonstrate the process of maintaining and calibrating energy-efficient machinery to ensure optimal performance and minimize environmental impact. • Show how to properly dispose of hazardous waste (e.g., lithium batteries, chemical residues) and deposit non-hazardous recyclable materials (e.g., plastics, aluminum, copper) in designated collection areas. • Demonstrate how to maintain documentation for waste disposal, conduct

	periodic waste audits, and identify opportunities for further waste reduction. • Show how to coordinate with authorized e-waste recyclers to ensure proper processing and disposal of materials. • Demonstrate how to follow national and international environmental laws, participate in sustainability audits, check for adherence to guidelines, and implement corrective actions based on assessments.
Classroom Aids	
Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
Lead-Free Solder Paste (with/without Flux), EMI/ROHS/WEEE Standard Documents, Internal Quality Control (IQC)/QMS/TQM Covering All Stages, Adhesives and Cleaning Products, 5S Items, Charts, Checklists, PCB Cleaning Solution (IPA), Stencil Sets & Racks, Conveyor Pallet, Specification Charts (for critical components like ICs, Microphone, Ear Piece, Connectors).	

Module 8: Employability Skills (30 Hours)

Mapped to DGT/VSQ/N0101, v1.0

Duration: 30:00 Hours

Key Learning Outcomes

Introduction to Employability Skills Duration: 1 Hour

After completing this programme, participants will be able to:

1. Discuss the importance of Employability Skills in meeting the job requirements

Constitutional values - Citizenship Duration: 1 Hour

2. Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen.
3. Show how to practice different environmentally sustainable practices

Becoming a Professional in the 21st Century Duration: 1 Hour

4. Discuss 21st-century skills.
5. Display a positive attitude, self-motivation, problem-solving, time management skills and continuous learning mindset in different situations.

Basic English Skills Duration: 2 Hours

6. Use appropriate basic English sentences/phrases while speaking

Communication Skills Duration: 4 Hours

7. Demonstrate how to communicate in a well-mannered way with others.
8. Demonstrate working with others in a team

Diversity & Inclusion Duration: 1 Hour

9. Show how to conduct oneself appropriately with all genders and PwD
10. Discuss the significance of reporting sexual harassment issues in time

Financial and Legal Literacy Duration: 4 Hours

11. Discuss the significance of using financial products and services safely and securely.
12. Explain the importance of managing expenses, income, and savings.
13. Explain the significance of approaching the concerned authorities in time for any exploitation as per legal rights and laws

Essential Digital Skills Duration: 3 Hours

14. Show how to operate digital devices and use the associated applications and features, safely and securely
15. Discuss the significance of using the internet for browsing, and accessing social media platforms, safely and securely

Entrepreneurship Duration: 7 Hours

16. Discuss the need for identifying opportunities for potential business, sources for arranging money and potential legal and financial challenges

Customer Service Duration: 4 Hours

17. Differentiate between types of customers

18. Explain the significance of identifying customer needs and addressing them

19. Discuss the significance of maintaining hygiene and dressing appropriately

Getting ready for Apprenticeship & Jobs Duration: 2 Hours

20. Create a biodata

21. Use various sources to search and apply for jobs

22. Discuss the significance of dressing up neatly and maintaining hygiene for an interview

23. Discuss how to search and register for apprenticeship opportunities

Module 9: On-the-Job Training

Mapped to Hand Soldering Technician - Telecom Boards

Mandatory Duration: 120:00	Recommended Duration: 00:00
Location: On-Site	
Terminal Outcomes • Demonstrate the preparation of telecom boards by organizing components, verifying specifications, and ensuring cleanliness before soldering. • Show how to perform high-density hand soldering of components on telecom boards while maintaining quality and precision. • Demonstrate the verification of solder joints to ensure they meet IPC and industry standards. • Show how to identify and rectify defects such as cold solder joints, bridging, and insufficient solder using rework techniques. • Demonstrate selective soldering techniques for through-hole and surface-mount components while minimizing thermal damage. • Show how to inspect completed telecom boards for missing, misaligned, or defective components based on specifications. • Demonstrate the cleaning of telecom boards using industry-approved solvents, ultrasonic cleaners, and other methods. • Show how to operate and maintain cleaning equipment such as vapor de-greasers and ultrasonic cleaners. • Demonstrate quality checks and assurance procedures, including board-level testing and documentation of defects. • Show how to identify and segregate recyclable, refurbishable, and hazardous telecom components such as PCBs, cables, and batteries. • Demonstrate the process of waste segregation, responsible disposal, and recycling of telecom materials. • Show how to apply green manufacturing practices, including lead-free soldering and energy-efficient assembly techniques. • Demonstrate the proper storage and labeling of e-waste following environmental and sustainability regulations. • Show how to maintain records for waste disposal, recycling, and sustainability audits to ensure compliance. • Demonstrate adherence to safety, health, and environmental (SHE) regulations while working on telecom production and assembly processes.	

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialisation	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Graduate	Telecom/ Electronics/ IT and other related domains	5	Electronics, PCB Assembly, or Telecom Manufacturing			

Trainer Certification	
Domain Certification	Platform Certification
Certified for Job Role: “Hand Soldering Technician - Telecom Boards” mapped to QP: “TEL/Q2500, v4.0”. Minimum accepted score is 80%.	Recommended that the Trainer is certified for the Job Role: “Trainer (VET and Skills)”, mapped to the Qualification Pack: “MEP/Q2601, v3.0”. The minimum accepted score as per MEPSC guidelines is 80%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
Graduate	Telecom/ Electronics/ IT and other related domains	5	Electronics, PCB Assembly, or Telecom Manufacturing			

Assessor Certification	
Domain Certification	Platform Certification
Certified for Job Role: “Hand Soldering Technician - Telecom Boards” mapped to QP: “TEL/Q2500, v4.0”. Minimum accepted score is 80%.	Certified for the Job Role: “Assessor (VET and Skills)”, mapped to the Qualification Pack: “MEP/Q2701, v3.0”, with a minimum score of 80%.

Assessment Strategy

1. Assessment System Overview:

- Batches assigned to the assessment agencies for conducting the assessment on SDSM/SIP or email
- Assessment agencies send the assessment confirmation to VTP/TC looping SSC
- Assessment agency deploys the ToA certified Assessor for executing the assessment
- SSC monitors the assessment process & records

2. Testing Environment:

- Confirm that the centre is available at the same address as mentioned on SDMS or SIP
- Check the duration of the training.
- Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
- If the batch size is more than 30, then there should be 2 Assessors.
- Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
- Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
- Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
- Check the availability of the Lab Equipment for the particular Job Role.

3. Assessment Quality Assurance levels / Framework:

- Question papers created by the Subject Matter Experts (SME)
- Question papers created by the SME verified by the other subject Matter Experts
- Questions are mapped with NOS and PC
- Question papers are prepared considering that levels 1 to 3 are for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management
- Assessor must be ToA certified & trainer must be ToT Certified
- Assessment agency must follow the assessment guidelines to conduct the assessment

4. Types of evidence or evidence-gathering protocol:

- Time-stamped & geotagged reporting of the assessor from assessment location
- Center photographs with signboards and scheme specific branding
- Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
- Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos

5. Method of verification or validation:

- Surprise visit to the assessment location
- Random audit of the batch
- Random audit of any candidate

6. Method for assessment documentation, archiving, and access

- Hard copies of the documents are stored

- Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage
- Soft copies of the documents & photographs of the assessment are stored in the Hard Drives

The trainee will be tested for the acquired skill, knowledge and attitude through formative/summative assessment at the end of the course and as this NOS and MC is adopted across sectors and qualifications, the respective AB can conduct the assessments as per their requirements.

References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective, or psychomotor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do it upon the completion of the training.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
NCVET	National Council for Vocational Education and Training
QP	Qualification Pack
MC	Model Curriculum
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards
NCO	National Classification of Occupations
ES	Employability Skills
TSSC	Telecom Sector Skill Council
TRAI	Telecom Regulatory Authority of India
PCB	Printed Circuit Board
ESD	Electrostatic Discharge
SMT	Surface-Mount Technology
THT	Through-Hole Technology
RoHS	Restriction of Hazardous Substances
IPC	Institute for Printed Circuits (Now IPC – Association Connecting Electronics Industries)
BGA	Ball Grid Array
AOI	Automated Optical Inspection
X-Ray	X-Ray Inspection (for PCB quality checks)
ICT	In-Circuit Testing
MSD	Moisture-Sensitive Device
REACH	Registration, Evaluation, Authorisation, and Restriction of Chemicals