

QUALIFICATION FILE

Hand Soldering Technician - Telecom Boards

☒ Short Term Training (STT) ☐ Long Term Training (LTT) ☒ Apprenticeship

☒ Upskilling ☐ Dual/Flexi Qualification ☒ For ToT ☒ For ToA

☒ General ☐ Multi-skill (MS) ☐ Cross Sectoral (CS) ☐ Future Skills ☐ OEM

NCrF/NSQF Level: 3.0

Submitted By:

Telecom Sector Skill Council

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Table of Contents

Section 1: Basic Details	3
Section 2: Module Summary	5
NOS/s of Qualifications.....	5
Mandatory NOS/s:	5
Assessment - Minimum Qualifying Percentage.....	5
Section 3: Training Related.....	6
Section 4: Assessment Related.....	6
Section 5: Evidence of the need for the Qualification.....	7
Section 6: Annexure & Supporting Documents Check List.....	7
Annexure 1: Evidence of Level.....	8
Annexure 2: Tools and Equipment (Lab Set-Up)	11
Annexure 3: Industry Validations Summary.....	12
Annexure 4: Training & Employment Details	15
Annexure 5: Blended Learning	16
Annexure 6: Detailed Assessment Criteria	17
Annexure 7: Assessment Strategy.....	21
Annexure 8: Acronym and Glossary	22

Section 1: Basic Details

1.	Qualification Name	Hand Soldering Technician - Telecom Boards													
2.	Sector/s	Telecom													
3.	Type of Qualification: ☐ New ☒ Revised ☐ Has Electives/Options ☐ OEM	NQR Code & version of existing/previous qualification: (2022/TEL/TSSC/05479, V3.0)	Qualification Name of existing/previous version: Hand Soldering Technician - Telecom Boards												
4.	a. OEM Name b. Qualification Name (Wherever applicable)														
5.	National Qualification Register (NQR) Code &Version (Will be issued after NSQC approval)	QG-03-TL-04092-2025-V2-TSSC	6. NCrf/NSQF Level: 3.0												
7.	Award (Certificate/Diploma/Advance Diploma/ Any Other (Wherever applicable specify multiple entry/exits also & provide details in annexure)	Certificate													
8.	Brief Description of the Qualification	A Hand Soldering Technician – Telecom Boards is responsible for soldering and de-soldering components, reworking defects, and cleaning and inspecting telecom boards while following the applicable quality and safety standards.													
9.	Eligibility Criteria for Entry for Student/Trainee/Learner/Employee	a. Entry Qualification & Relevant Experience: <table border="1"> <thead> <tr> <th>S. No.</th> <th>Academic/Skill Qualification (with Specialization - if applicable)</th> <th>Required Experience (with Specialization - if applicable)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>10th Grade Pass</td> <td></td> </tr> <tr> <td>2.</td> <td>8th Grade Pass</td> <td>3 years of relevant experience in communication electronics</td> </tr> <tr> <td>3.</td> <td>Previous relevant Qualification of NSQF Level 2.5</td> <td>1.5 years of experience in communication electronics</td> </tr> </tbody> </table> b. Age: NA		S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)	1.	10 th Grade Pass		2.	8 th Grade Pass	3 years of relevant experience in communication electronics	3.	Previous relevant Qualification of NSQF Level 2.5	1.5 years of experience in communication electronics
S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)													
1.	10 th Grade Pass														
2.	8 th Grade Pass	3 years of relevant experience in communication electronics													
3.	Previous relevant Qualification of NSQF Level 2.5	1.5 years of experience in communication electronics													
10.	Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))	15	11. Common Cost Norm Category (I/II/III) (wherever applicable): I												
12.	Any Licensing requirements for Undertaking Training on This Qualification (wherever applicable)	NA													

13.	Training Duration by Modes of Training Delivery (<i>Specify Total Duration as per selected training delivery modes and as per requirement of the qualification</i>)	☐ Offline ☐ Online ☒ Blended <table border="1"> <thead> <tr> <th>Training Delivery Modes</th><th>Theory (Hours)</th><th>Practical (Hours)</th><th>OJT Mandatory (Hours)</th><th>OJT Recommended (Hours)</th><th>Total (Hours)</th></tr> </thead> <tbody> <tr> <td>Classroom (offline)</td><td>150</td><td>180</td><td>120</td><td></td><td rowspan="2">450</td></tr> <tr> <td>Online</td><td>150</td><td></td><td></td><td></td></tr> </tbody> </table> <i>(Refer Blended Learning Annexure for details)</i>					Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)	Classroom (offline)	150	180	120		450	Online	150			
Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)																		
Classroom (offline)	150	180	120		450																		
Online	150																						
14.	Aligned to NCO/ISCO Code/s (<i>if no code is available mention the same</i>)	NCO-2015/3114.1404																					
15.	Progression path after attaining the qualification (<i>Please show Professional and Academic progression</i>)	Hand Soldering Technician - Telecom Boards (Level 3) → Hand Soldering – Senior Technician - Telecom Boards (Level 4)																					
16.	Other Indian languages in which the Qualification & Model Curriculum are being submitted	Hindi																					
17.	Is similar Qualification(s) available on NQR-if yes, justification for this qualification	☐ Yes ☒ No URLs of similar Qualifications:																					
18.	Is the Job Role Amenable to Persons with Disability	☒ Yes ☐ No If “Yes”, specify applicable type of Disability: <i>Motor Impairment, Hearing Impairments, Speech and Language Disorders</i>																					
19.	How Participation of Women will be Encouraged	Encouraging the participation of women in the role of Hand Soldering Technician - Telecom Boards can be achieved through strategies that promote diversity, inclusivity, and gender equality. This includes offering targeted training and skill development programs tailored for female candidates interested in hand soldering. Additionally, fostering a workplace culture that prioritizes safety, respect, and inclusivity—free from harassment or discrimination—is essential to ensuring equal opportunities for women in the telecom sector.																					
20.	Are Greening/ Environment Sustainability Aspects Covered (<i>Specify the NOS/Module which covers it</i>)	☒ Yes ☐ No NOS: TEL/N9107																					
21.	Is Qualification Suitable to be Offered in Schools/Colleges	Schools ☐ Yes ☐ No Colleges ☒ Yes ☐ No																					
22.	Name and Contact Details of Submitting / Awarding Body SPOC (<i>In case of CS or MS, provide details of both Lead AB & Supporting ABs</i>)	Name: Mr. Praveen Sirohi Email: ceo@tsscindia.com Website: www.tsscindia.com Contact No.: 0124-4148029																					
23.	Final Approval Date by NSQC: 08-05-2025	24. Validity Duration: 3 years		25. Next Review Date: 30-04-2028																			

Section 2: Module Summary

NOS/s of Qualifications

(In exceptional cases these could be described as components)

Mandatory NOS/s:

Specify the training duration and assessment criteria at NOS/ Module level. For further details refer curriculum document.

Th.-Theory **Pr.**-Practical **OJT**-On the Job Training **Man.**-Mandatory **Rec.**-Recommended **Proj.**-Project

S. No	NOS/Module Name	NOS/Module Code & Version (if applicable)	Core/Non-Core	NCrF/NS QF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) (if applicable)
1.	High-Density Hand Soldering of Components on Telecom Boards	TEL/N2500, v5.0	Core	3.0	5	60	50	40	-	150	30	50	-	20	100	25
2.	Rework on Defects and Undertake Selective Soldering	TEL/N2501, v4.0	Core	3.0	5	30	70	50	-	150	30	50	-	20	100	25
3.	Cleaning and Inspection of PCBs	TEL/N2502, v5.0	Core	4.0	3	20	40	30	-	90	30	50	-	20	100	20
4.	Follow Sustainability Practices in Telecom Production and Assembly Line Processes	TEL/N9107, v1.0	Core	4.0	1	10	20	-	-	30	30	50	-	20	100	20
5.	Employability Skills (30 Hours)	DGT/VSQ/N 0101, v1.0	Non-Core	2.0	1	30	-	-	-	30	20	30	-	-	50	10
Duration (in Hours) / Total Marks					15	150	180	120	-	450	140	230	-	80	450	100

Assessment - Minimum Qualifying Percentage

Please specify **any one** of the following:

Minimum Pass Percentage – Aggregate at qualification level: 50 % (Every Trainee should score specified minimum aggregate passing percentage at qualification level to successfully clear the assessment.)

Minimum Pass Percentage – NOS/Module-wise: - % (Every Trainee should score specified minimum passing percentage in each mandatory and selected elective NOS/Module to successfully clear the assessment.)

Section 3: Training Related

1.	Trainer's Qualification and experience in the relevant sector (in years) <i>(as per NCVET guidelines)</i>	Educational Qualification: Graduate in any discipline, preferably Telecom/ Electronics/ IT and other related domains. Industry & Training Experience: Minimum 5 years of experience of industry in the Electronics, PCB Assembly, or Telecom Manufacturing. Certification: "Trainer" mapped to the Qualification Pack "MEP/Q2601, v3.0". Minimum accepted score is 80% aggregate.
2.	Master Trainer's Qualification and experience in the relevant sector (in years) <i>(as per NCVET guidelines)</i>	Educational Qualification: Graduate in any discipline, preferably Telecom/ Electronics/ IT and other related domains. Industry & Training Experience: Minimum 7 years of industry experience in the Electronics, PCB Assembly, or Telecom Manufacturing. Certification: "Master Trainer" mapped to the Qualification Pack "MEP/Q2602, v3.0". Minimum accepted score is 90% aggregate.
3.	Tools and Equipment Required for Training	☐ Yes ☐ No <i>(If "Yes", details to be provided in Annexure)</i>
4.	In Case of Revised Qualification, Details of Any Upskilling Required for Trainer	NA

Section 4: Assessment Related

1.	Assessor's Qualification and experience in relevant sector (in years) <i>(as per NCVET guidelines)</i>	Educational Qualification: Graduate in any discipline, preferably Telecom/ Electronics/ IT and other related domains. Industry & Training Experience: Minimum 5 years of experience of industry in the Electronics, PCB Assembly, or Telecom Manufacturing. Certification: "Assessor" mapped to the Qualification Pack "MEP/Q2701, v3.0". Minimum accepted score is 80% aggregate.
2.	Proctor's Qualification and experience in relevant sector (in years) <i>(as per NCVET guidelines)</i>	Educational Qualification: Graduate in any discipline, preferably Telecom/ Electronics/ IT and other related domains. Industry & Training Experience: Minimum 5 years of experience of industry in the Electronics, PCB Assembly, or Telecom Manufacturing. Certification: "Assessor" mapped to the Qualification Pack "MEP/Q2701, v3.0". Minimum accepted score is 80% aggregate.

3.	Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years) <i>(as per NCVET guidelines)</i>	Educational Qualification: Graduate in any discipline, preferably Telecom/ Electronics/ IT and other related domains. Industry & Training Experience: Minimum 7 years of experience of industry in the Electronics, PCB Assembly, or Telecom Manufacturing. Certification: "Lead Assessor" mapped to the Qualification Pack "MEP/Q2702, v3.0" Minimum accepted score is 90% aggregate.
4.	Assessment Mode <i>(Specify the assessment mode)</i>	Offline/Online
5.	Tools and Equipment Required for Assessment	☒ Same as for training ☐ Yes ☐ No <i>(details to be provided in Annexure-if it is different for Assessment)</i>

Section 5: Evidence of the need for the Qualification

Provide Annexure/Supporting documents name.

1.	Latest Skill Gap Study (not older than 2 years) (Yes/No): NA
2.	Latest Market Research Reports or any other source (not older than 2 years) (Yes/No): NA
3.	Government /Industry initiatives/ requirement (Yes/No): NA
4.	Number of Industry validation provided: 21
5.	Estimated nos. of persons to be trained and employed: 3190
6.	Evidence of Concurrence/Consultation with Line Ministry/State Departments: <i>Approved</i> If "No", why:

Section 6: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name

1.	Annexure: NCrf/NSQF level justification based on NCrf level/NSQF descriptors <i>(Mandatory)</i>	<i>Annexure 1</i>
2.	Annexure: List of tools and equipment relevant for qualification <i>(Mandatory, except in case of online course)</i>	<i>Annexure 2</i>
3.	Annexure: Detailed Assessment Criteria <i>(Mandatory)</i>	<i>Annexure 6</i>
4.	Annexure: Assessment Strategy <i>(Mandatory)</i>	<i>Annexure 7</i>
5.	Annexure: Blended Learning <i>(Mandatory, in case selected Mode of delivery is "Blended Learning")</i>	NA

6.	Annexure: Multiple Entry-Exit Details <i>(Mandatory, in case qualification has multiple Entry-Exit)</i>	NA
7.	Annexure: Acronym and Glossary <i>(Optional)</i>	Annexure 8
8.	Supporting Document: Model Curriculum <i>(Mandatory – Public view)</i>	Attached
9.	Supporting Document: Career Progression <i>(Mandatory - Public view)</i>	Attached
10.	Supporting Document: Occupational Map <i>(Mandatory)</i>	Attached
11.	Supporting Document: Assessment SOP <i>(Mandatory)</i>	Attached
12.	Any other document you wish to submit:	NO

Annexure 1: Evidence of Level

NCrF/NSQF Level Descriptors	Key requirements of the job role/ outcome of the qualification	How the job role/ outcomes relate to the NCrF/NSQF level descriptor	NCrF/NSQF Level
Professional Theoretical Knowledge/Process	- Understanding of electronic components used in telecom boards, their symbols, specifications, and functions. - Knowledge of high-density hand soldering techniques, including soldering material properties (lead vs. lead-free solder), flux types, and their applications. - Familiarity with PCB (Printed Circuit Board) structures, including single-layer, multi-layer, and flexible PCBs, and their impact on soldering. - Awareness of IPC soldering standards (IPC-A-610, J-STD-001) for maintaining soldering quality and workmanship. - Principles of thermal management, including heat dissipation techniques and temperature profiling for preventing thermal damage to components. - Understanding of ESD (Electrostatic Discharge) safety and the precautions necessary to handle sensitive telecom components. - Knowledge of common defects in soldering, such as cold solder joints, solder bridges, and voids, and how to prevent them. - Compliance with occupational health and safety (OHS) standards, including the use of PPE (Personal Protective	A Hand Soldering Technician – Telecom Boards at NSQF Level 3 requires foundational knowledge of electronic components, soldering materials, and telecom board structures. The individual must understand the principles of hand soldering, including the impact of temperature, solder composition, and flux application on joint integrity. They should be familiar with schematic diagrams, component placements, and industry standards for high-density telecom boards. Additionally, knowledge of safety protocols, electrostatic discharge (ESD) precautions, and quality inspection methods is essential to maintain efficiency, reliability, and compliance with industry best practices.	3.0

	Equipment) and fume extraction systems. Understanding of sustainability practices in electronic manufacturing, including waste segregation, component recycling, and safe disposal of hazardous materials.		
Professional and Technical Skills/ Expertise/ Professional Knowledge	- Ability to prepare telecom boards by cleaning, applying flux, and positioning components accurately before soldering. - Proficiency in using manual and semi-automated soldering equipment, such as soldering irons, tweezers, magnifiers, hot air stations, and reflow ovens. - Hands-on experience in placing, soldering, and desoldering Surface Mount Technology (SMT) and Through-Hole components. - Ability to read and interpret technical drawings, circuit diagrams, and assembly instructions for telecom board soldering. - Competence in using inspection tools, such as microscopes, X-ray machines (for hidden joints), and Automated Optical Inspection (AOI) systems, to ensure soldering quality. - Ability to identify, diagnose, and rework defective solder joints using rework stations and solder wick techniques. - Skills in selective soldering, ensuring minimal thermal damage while replacing faulty components. - Proficiency in cleaning telecom boards using solvents, ultrasonic cleaners, and brushes to remove flux residues and contamination. - Knowledge of quality assurance methods, including functional testing of boards and compliance with telecom industry standards. - Ability to identify and segregate recyclable and non-recyclable components in line with sustainability guidelines.	A Hand Soldering Technician – Telecom Boards must possess technical skills in high-density hand soldering, reworking defects, and selective soldering of telecom components. The role involves preparing boards, handling micro-components with precision, and ensuring proper soldering techniques to prevent defects such as cold joints, solder bridges, and component misalignment. The individual should be adept at using tools such as soldering irons, flux dispensers, and magnification devices to achieve high accuracy. They must also perform thorough inspections, detect defects, and carry out cleaning processes to maintain board functionality and longevity. Furthermore, adherence to safety regulations, sustainability practices, and environmental compliance in telecom board assembly is crucial.	3.0
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	- Development of precision, patience, and steady hand-eye coordination to perform intricate soldering tasks. - Time management and ability to prioritize tasks to ensure efficiency in an assembly line environment. - Problem-solving skills to analyze soldering defects,	To be employment-ready, a Hand Soldering Technician – Telecom Boards must demonstrate problem-solving skills, adaptability, and the ability to work under supervision in a structured environment. The individual should develop a systematic approach to soldering, reworking, and inspecting telecom boards while maintaining efficiency and precision.	3.0

	determine causes, and apply corrective measures. • Ability to work independently or as part of a production team, ensuring coordination with quality inspectors and supervisors. • Understanding of workplace ethics, discipline, and compliance with standard operating procedures (SOPs) in telecom manufacturing. • Awareness of career opportunities, including employment in electronics manufacturing, telecom service centers, or self-employment in board repairs. • Basic entrepreneurial knowledge, such as how to set up a telecom board repair service, procure necessary tools, and engage customers. • Communication skills for coordinating with engineers, supervisors, and quality inspectors to resolve defects and improve production efficiency.	Time management and teamwork are essential for coordinating tasks in production settings. Understanding industry expectations regarding quality control, documentation, and sustainability compliance enhances employability. For entrepreneurship, knowledge of rework solutions, component sourcing, and repair services can enable individuals to explore self-employment opportunities in telecom board servicing and maintenance.	
Broad Learning Outcomes/Core Skill	• Gain expertise in high-density hand soldering techniques for telecom boards. • Develop proficiency in defect analysis and rework techniques, including desoldering and selective soldering. • Learn to inspect and clean telecom boards, ensuring compliance with telecom industry standards. • Understand and apply ESD protection measures when handling electronic components. • Acquire basic troubleshooting skills for diagnosing circuit faults and connectivity issues in telecom boards. • Develop critical thinking skills to analyze production errors and suggest corrective actions. • Enhance adaptability to different telecom board layouts and soldering process variations. • Learn and implement sustainability practices, including green manufacturing, waste management, and safe disposal of electronic components. • Strengthen numerical and analytical skills for measuring solder joint integrity and evaluating board performance.	The role of a Hand Soldering Technician – Telecom Boards involves performing routine and non-routine soldering tasks, including assembling, soldering, reworking, and inspecting telecom boards. The individual should develop steady hand-eye coordination, focus, and attention to detail to achieve high-quality results. Understanding component alignment, using appropriate soldering techniques, and following process documentation are key skills. Additionally, the role requires familiarity with sustainability practices, including identifying and managing recyclable and hazardous components. By working within defined operational procedures, the technician contributes to structured telecom board production while adhering to quality and environmental standards.	3.0

	Improve teamwork and collaboration skills to function effectively in an industrial environment.		
Responsibility	- Ensuring high-quality soldering and rework to meet telecom industry standards and avoid product defects. - Maintaining clean and organized workspaces, following 5S methodology (Sort, Set in Order, Shine, Standardize, Sustain). - Following workplace safety protocols, including using PPE, handling chemicals safely, and managing soldering equipment properly. - Complying with ESD-safe handling procedures to prevent damage to sensitive telecom components. - Conducting self-inspection and reporting defects to supervisors for corrective action. - Taking accountability for adhering to standard operating procedures (SOPs) in telecom board assembly and rework. - Contributing to continuous improvement initiatives by providing feedback on soldering process efficiency. - Adhering to sustainability regulations, ensuring proper segregation, disposal, and recycling of electronic waste. - Ensuring traceability and documentation of soldering activities for quality control and compliance audits. - Supporting team members and training new technicians in best soldering practices to improve overall production quality.	In terms of responsibility, the Hand Soldering Technician - Telecom Boards is accountable for performing high-density hand soldering, rework, and inspection of telecom boards while ensuring compliance with quality and safety standards. The individual plays a crucial role in assembling, repairing, and maintaining telecom circuit boards, following prescribed guidelines and industry best practices. Responsibilities also include ensuring proper documentation of soldering and rework activities, coordinating with quality inspectors and supervisors, and adhering to environmental and sustainability regulations related to e-waste disposal and material handling. The requirement to perform tasks under supervision while maintaining precision, safety, and operational efficiency justifies the classification of this role at NSQF Level 3.	3.0

Annexure 2: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment

Batch Size: 30

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1.	Antistatic Gloves and Mats	pieces	5
2.	Battery Booster	pieces	2
3.	Black/White Board	pieces	1
4.	Cleaning Brush	pieces	5
5.	Cleaning Solution (Eg. IPA (Iso Propyl Alcohol))	ml	5

6.	Connecting cables (for connecting smartphone/feature phones to PC/Laptop)	pieces	2
7.	DC Power Supply	pieces	1
8.	Hot Air Blower	pieces	3
9.	Jumper Wire	pieces	5
10.	matching Connector/Adaptors	pieces	4
11.	Multimeter	pieces	3
12.	Nose Plier	pieces	5
13.	Openers	pieces	5
14.	PCB Board	pieces	10
15.	PCB Holder	pieces	5
16.	Projection System with PC/Laptop	pieces	1
17.	Rework Station	pieces	3
18.	Screw Drivers	pieces	5
19.	Solder Wire	pieces	5
20.	Soldering Flux	pieces	5
21.	Soldering Iron	pieces	5
22.	Tweezers	pieces	5
23.	Ultrasonic Cleaner Machine	pieces	1
24.	Wrist Strap	pieces	2

Classroom Aids

The aids required to conduct sessions in the classroom are:

1. Whiteboard
2. Projector
3. Computer/Laptop
4. Chairs
5. Tables
6. Whiteboard marker
7. Duster

Annexure 3: Industry Validations Summary

Provide the summary information of all the industry validations in table. This is not required for OEM qualifications.

S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile (if available)
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1.	Ibus Network and infrastructure Pvt.Ltd.	TK Narayanan	Deputy General Manager Commercial	7th Floor Tower B, Vatika Towers Golf Crouse Road Sector 54 Gurugram ,Haryana India 122011	tk.narayanan@ibusnetworks.com	
2.	ICAI Computer & IT Skill Enhancement Institute (ICSE)	Er. Kamaljeet Kumar Sharma	Managing Director	#2266 (Site No. 24), Phase 7/Sector 61, S.A.S Nagar (Mohali) 160062, Punjab (India)	contact@icseinstitute.com kksmhl@gmail.com	
3.	JRS Global Networks Pvt.Ltd.	Arvind Yadav	Asst. Account Manager Telecom	A 22, Sector-65 Noida, UP-201307	account3@jrsgl.com	
4.	Expert Consultant & Coach for Telecom Fibre Optics, FTTx and Broadband	Dr. Anuj Shrivastava	Ex Executive Director Indian Telecom Services	Ghaziabad, UP	srianujkumar@gmail.com	
5.	Jio Platforms Limited (Jio)	Abhijay Singh Sisodia	Senior Manager	Office-101, Saffron, Nr.Centre Point, Panchwati 5 Rasta, Ambawadi, Ahmedabad-380006 Gujarat	abhijay.sisodia@ril.com	
6.	Vodafone India Shared Service Private Limited	Manmohan Sharma	Deputy General Manager	0-4th floor, Cluster D, Wing 3, EON Free Zone, Kharadi, Pune, Maharashtra 411014	manmohan.sharma@vodafone.com	
7.	Teeco	Naman Khosla Abhijay Singh Sisodia	Technical Consultant	Infotech Center -6th floor, 14/2 Old Delhi Gurgaon Road, Dundahera, Gurgaon - 122016, India	naman.khosla@teeco.com	
8.	Global Logic	Rashid Muhammad	Associate Manager	Plot No.7, Oxygen Business Park SEZ, Tower, 3, Noida-Greater Noida Expy, Sector 144, Noida, Uttar Pradesh 201304	rashid.muhammad@globallogic.com	
9.	Mahendra Technical Institute	Mahendra Brmukh	Chairman and Managing Director	1st Floor, 3/B M B Classic, Telco Road, Near Kailash Dairy, Chinchwad Station, Pune - 411019 Maharashtra, India	info.mtipune@gmail.com	

10.	Amazon	Anshul Gupta	Program Manager	Bangalore		anshlgu@amazon.com	
11.	Stealth Mode Startup Company	Avadh Gupta	Founder, Co-Founder & Investor	Pune		avadhmac@gmail.com	
12.	Ranitronics	Yakama Vijayasree Kumar	Founder & Technical Consultant	Villa 302, Namaha Rhythm, Road No. 1, Kavya Avenue, Bachupally, Hyderabad - 500090, Telangana		info@ranitronics.com	
13	Eco Works	Deepali Sinha Khetriwal	Founder & CEO	C-601, Kalpataru Regency Phase 1, Kalyani Nagar, Pune 411006		deepali@ecowork.international	
14	Himachal Futuristic Communications Limited (HFCL)	Amit Agarwal	VP PLM	8, Commercial Complex, Masjid Moth, Greater Kailash - 11, New Delhi - 110048, India		amit.agarwal@hfcl.com	
15	Tata Communication	Alka Asthana	Head of Regulatory Affairs	Next Gen Tower Outer Ring Road, GK-1, New Delhi - 110048		alka.asthanatelecom@gmail.com	
16	Reckitt Benckiser	Sachin Sharma	Demand Manager	Udyog Vihar, Phase V, Gurgaon, Haryana		sachin.sharma@rb.com	
17	Sycamore Informatics	Rahul Kumar Kaushik	Product Manager	No. 6, 2nd Floor, 2nd Main, Arekere, Off Bannerghatta Road, Bangalore 560076		rahul.kaushik@sycamoreinformatics.com	
18	Nokia	Saurabh Singh	Software Quality Engineer	L5 and L6 Building Manyata Embassy Business Park Outer Ring Road, Nagawara 560045		saurabh.9.singh@nokia.com	
19	Edge Telecom	Arun Singh	Senior Project Engineer	9th floor, ILD Trade Centre, 904, main, Badshahpur Sohna Rd Hwy, near Subhash Chowk, Gurugram, Haryana 122018		arun.singh@edgetelecom.org	
20	Conduent	Prince Jain	Sr. Business Analyst	Plot No. 20, Candor Tech Space, Noida 201304		prince.jain@conduent.com	

21	Artificial Intelligence Technologies	Rohit Kumar Sharma	Manager – Development	A-21, sector 4, Block A, Kailash Colony, Greater Kailash, New Delhi,	rohit.sharma@aituniversal.com	
22	Ecom Express.in	Shekhar Poswal	Senior QA L1	10 th Floor, Ambience Corporate Tower II, Ambience Island, Gurugram 122001	Shekhar.p@ecomexpress.in	
23	Paarminder Electronics Process Consultancy	Paarminder Singh	Consultant	New Delhi	singhpaarminder@gmail.com	
24	Senryaku Consulting	Udit Kaushik	Co-founder	Senryaku Management Private Limited Address: UTC031, DLF The Ultima, Sector 81, Gurugram, HR 122004	udit.kau@gmail.com	
25	Sopra Steria	Rikan Singh Tomar	Team Leader	Plot No. 20 & 21, Seaview Special Economic Zone, Building 4, Sector 135, Noida, Uttar Pradesh 201304	rikan.singh@soprasteria.com	

Annexure 4: Training & Employment Details

Training and Employment Projections:

Year	Total Candidates		Women		People with Disability	
	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities
2025	957	670	48	24	48	24

2026	957	670	48	24	48	24
2027	1276	893	64	32	64	32

Data to be provided year-wise for next 3 years

Training, Assessment, Certification, and Placement Data for previous versions of qualifications:

Qualification Version	Year	Total Candidates				Women				People with Disability			
		Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed
4.0	Dec 2021 to March 2022	258	244	233									
4.0	April 2022 to March 2023	148	144	131									
4.0	April 2023 to March 2024	138	137	130									
4.0	April 2024 to March 2025	2005	59	53									

Applicable for revised qualifications only, data to be provided year-wise for past 3 years.

List Schemes in which the previous version of Qualification was implemented:

- 1.
- 2.

Content availability for previous versions of qualifications:

☐ Participant Handbook ☐ Facilitator Guide ☐ Digital Content ☐ Qualification Handbook ☐ Any Other:

Languages in which Content is available:

Annexure 5: Blended Learning

Blended Learning Estimated Ratio & Recommended Tools:

Refer NCVET "Guidelines for Blended Learning for Vocational Education, Training & Skilling" available on:

<https://ncvet.gov.in/sites/default/files/Guidelines%20for%20Blended%20Learning%20for%20Vocational%20Education,%20Training%20&%20Skilling.pdf>

S. No.	Select the Components of the Qualification	List Recommended Tools – for all Selected Components	Offline : Online Ratio
1	☒ Theory/ Lectures - Imparting theoretical and conceptual knowledge	LMS Portal- TSSC Telco Learning Portal will be utilized with online content/virtual lectures (Telcolearning.com)	100:100
2	☒ Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners	LMS Portal- TSSC Telco Learning Portal will be utilized with online content/virtual lectures (Telcolearning.com)	100:100
3	☐ Showing Practical Demonstrations to the learners		
4	☐ Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training		
5	☐ Tutorials/ Assignments/ Drill/ Practice		
6	☐ Proctored Monitoring/ Assessment/ Evaluation/ Examinations		
7	☐ On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training		

Annexure 6: Detailed Assessment Criteria

Detailed assessment criteria for each NOS/Module are as follows:

NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
TEL/N2500: High-Density Hand Soldering of Components on Telecom Boards	<i>Prepare board and material/components</i>	16	20	-	10
	PC1. interpret Computer-Aided Design (CAD) specifications to identify soldering requirements	2	2	-	1
	PC2. set up the soldering jig/fixture according to work specifications	2	2	-	1
	PC3. collect all required components, ensuring their compatibility with the board layout	2	3	-	2
	PC4. adjust the soldering station temperature as per the component and board specifications and verify accuracy using sensors	2	3	-	2
	PC5. select the appropriate solder bit, soldering wire, and flux based on work specifications	2	3	-	1
	PC6. clean soldering bits, component leads, and PCB surfaces to remove oxidation, dust, or contamination	2	3	-	1
	PC7. check and clean the solder wire to prevent impurities affecting the soldering process	2	2	-	1
	PC8. verify and apply the correct flux to improve soldering quality and prevent defects	2	2	-	1
	<i>Solder components on boards</i>	14	30	-	10
	PC9. position and align components precisely according to specifications, ensuring correct orientation	2	4	-	1

	PC10. apply the correct amount of solder, flux, and heat, ensuring even flow without excess solder on gold-plated areas	2	4	-	1
	PC11. control soldering temperature and nozzle vector speed to maintain uniformity and avoid thermal damage to components	2	5	-	2
	PC12. follow proper soldering techniques to minimize solder bridges, cold joints, and dry soldering defects	2	5	-	2
	PC13. maintain the soldering station by performing start-up, shutdown, and preventive maintenance procedures	2	4	-	2
	PC14. check solder joints visually or using magnification tools to ensure compliance with industry standards	2	4	-	1
	PC15. rectify minor soldering defects, such as excess solder, bridges, or cold joints, using appropriate rework techniques	2	4	-	1
	Total Marks	30	50	-	20
TEL/N2501: Rework on Defects and Undertake Selective Soldering	<i>Verification of completed board against specifications</i>	<i>16</i>	<i>20</i>	<i>-</i>	<i>10</i>
	PC1. retrieve and interpret the correct CAD layout and BOM from the software library/system	3	4	-	2
	PC2. compare and verify on-board component placement and orientation with CAD specifications	3	4	-	2
	PC3. cross-check component values and specifications against drawings/work orders	4	4	-	2
	PC4. check the board for defects such as excess burr on component bases, visible damage, solder bridges, pinholes/blowholes, spikes, peaks, gold fingers, and dry solder joints	4	4	-	2
	PC5. conduct and interpret functional tests of the board using appropriate tools and equipment	2	4	-	2
	<i>Selective soldering and rework</i>	<i>14</i>	<i>30</i>	<i>-</i>	<i>10</i>
	PC6. identify and mark defective components for rework or replacement	1	3	-	1
	PC7. determine whether components can be reused or require sourcing new replacements	2	4	-	1
	PC8. remove faulty solder joints using appropriate desoldering techniques and tools	2	4	-	2
	PC9. apply proper selective soldering techniques, maintaining appropriate temperature and solder flow	2	4	-	2
	PC10. ensure compliance with soldering specifications, avoiding overheating, cold solder joints, and improper wetting	2	4	-	1
	PC11. reassemble and resolder components while adhering to ESD safety precautions	2	4	-	1
	PC12. verify reworked components for correct placement, orientation, and connectivity under a microscope	2	4	-	1
	PC13. maintain records of reworked components and report unresolved defects per escalation protocols	1	3	-	1
	Total Marks	30	50	-	20
TEL/N2502: Cleaning and Inspection of PCBs	<i>Cleaning of PCBs</i>	<i>10</i>	<i>20</i>	<i>-</i>	<i>6</i>
	PC1. clean PCBs to remove flux residues, white patches, and other contaminants using specified solvents and cleaning agents	2	5	-	2
	PC2. operate vapor de-greaser, ultrasonic cleaner, and other industry-recommended equipment for cleaning PCBs, ensuring effective removal of	3	5	-	2

	impurities				
	PC3. dry PCBs using controlled methods to prevent damage and contamination	3	5	-	1
	PC4. package and store cleaned PCBs using electrostatic discharge (ESD)-safe materials and procedures to maintain integrity and prevent damage	2	5	-	1
	<i>Quality checks and assurance</i>	20	30	-	14
	PC5. check PCBs for missing, wrongly mounted, or misaligned components as per specifications and bill of materials (BOM)	3	4	-	2
	PC6. inspect soldering quality, including workmanship, joint integrity, and adherence to IPC standards	3	4	-	2
	PC7. verify placement of board identifiers, conformal coatings, and compliance with customer or regulatory requirements	3	4	-	2
	PC8. identify defects such as cold solder joints, bridging, and insufficient solder, and take corrective action	3	4	-	2
	PC9. identify and segregate functional and defective PCBs	2	4	-	2
	PC10. document findings and escalate non-conformities as per established reporting protocols	2	3	-	1
	PC11. carry out routine maintenance of the SMT equipment to ensure their optimal functioning	2	3	-	1
	PC12. conduct routine shop floor audits to ensure adherence to process parameters, including temperature and humidity control	2	4	-	2
	Total Marks	30	50	-	20
TEL/N9107: Follow Sustainability Practices in Telecom Production and Assembly Line Processes	<i>Identify and segregate recyclable, refurbishable, and hazardous components</i>	6	10	-	5
	PC1. check incoming and outgoing materials to identify recyclable, refurbishable, and hazardous components	1	2	-	1
	PC2. categorize telecom components such as PCBs, electronic components, cables, batteries, and plastic casings for appropriate processing	1	2	-	1
	PC3. maintain an inventory of recyclable and hazardous materials to track waste management	1	2	-	1
	PC4. store e-waste separately and label it in accordance with Extended Producer Responsibility (EPR) guidelines	1	2	-	1
	PC5. identify and report any improper disposal practices to the designated authority	2	2	-	1
	<i>Follow green manufacturing and sustainable assembly practices</i>	10	15	-	5
	PC6. use energy-efficient equipment, tools, and automated systems to reduce carbon footprint	2	3	-	1
	PC7. follow low-emission soldering and lead-free assembly processes to minimize pollution	2	3	-	1
	PC8. optimize the use of materials, water, and electricity during production	2	3	-	1
	PC9. conduct regular maintenance and calibration of energy-efficient machinery to ensure optimal performance	2	3	-	1
	PC10. adopt ISO 14001 (Environmental Management System) compliance in production workflows	2	3	-	1
	<i>Dispose of and recycle waste</i>	10	15	-	6

	PC11.dispose of hazardous waste (e.g., lithium batteries, chemical residues) in accordance with environmental safety protocols	2	3	-	1
	PC12.deposit non-hazardous, recyclable materials (e.g., plastics, aluminum, copper) in designated collection areas	2	3	-	2
	PC13.maintain documentation for waste disposal and recycling compliance audits	2	3	-	1
	PC14.conduct periodic waste audits to identify opportunities for further waste reduction	2	3	-	1
	PC15.coordinate with authorized e-waste recyclers to ensure proper processing and disposal	2	3	-	1
	<i>Comply with environmental and sustainability regulations</i>	4	10	-	4
	PC16.follow the applicable national and international environmental laws and regulations for telecom manufacturing	1	2	-	1
	PC17.participate in sustainability audits and assessments as per company policies	1	3	-	1
	PC18.check for adherence to sustainability guidelines and report deviations	1	3	-	1
	PC19.follow corrective actions based on environmental audits and assessments	1	2	-	1
Total Marks		30	50	-	20
DGT/VSQ/N0101: Employability Skills (30 Hours)	<i>Introduction to Employability Skills</i>	1	1	-	-
	PC1. understand the significance of employability skills in meeting the job requirements	-	-	-	-
	<i>Constitutional values – Citizenship</i>	1	1	-	-
	PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices	-	-	-	-
	<i>Becoming a Professional in the 21st Century</i>	1	3	-	-
	PC3. explain 21st Century Skills such as Self- Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.	-	-	-	-
	<i>Basic English Skills</i>	2	3	-	-
	PC4. speak with others using some basic English phrases or sentences	-	-	-	-
	<i>Communication Skills</i>	1	1	-	-
	PC5. follow good manners while communicating with others	-	-	-	-
	PC6. work with others in a team	-	-	-	-
	<i>Diversity & Inclusion</i>	1	1	-	-
	PC7. communicate and behave appropriately with all genders and PwD	-	-	-	-
	PC8. report any issues related to sexual harassment	-	-	-	-
	<i>Financial and Legal Literacy</i>	3	4	-	-
	PC9. use various financial products and services safely and securely	-	-	-	-
	PC10. calculate income, expenses, savings etc.	-	-	-	-
	PC11. approach the concerned authorities for any exploitation as per legal rights and laws	-	-	-	-
	<i>Essential Digital Skills</i>	4	6	-	-
	PC12. operate digital devices and use its features and applications securely and safely	-	-	-	-
	PC13. use internet and social media platforms securely and safely	-	-	-	-
	<i>Entrepreneurship</i>	3	5	-	-

PC14. identify and assess opportunities for potential business	-	-	-	-
PC15. identify sources for arranging money and associated financial and legal challenges	-	-	-	-
<i>Customer Service</i>	2	2	-	-
PC16. identify different types of customers	-	-	-	-
PC17. identify customer needs and address them appropriately	-	-	-	-
PC18. follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship & Jobs</i>	1	3	-	-
PC19. create a basic biodata	-	-	-	-
PC20. search for suitable jobs and apply	-	-	-	-
PC21. identify and register apprenticeship opportunities as per requirement	-	-	-	-
Total Marks	20	30	-	-
Grand Total	140	230		80

Annexure 7: Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the Candidate on the required competencies of the program.

Mention the detailed assessment strategy in the provided template.

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.

Annexure 8: Acronym and Glossary

Acronym

Acronym	Description
AA	Assessment Agency
AB	Awarding Body
ISCO	International Standard Classification of Occupations
NCO	National Classification of Occupations
NCrF	National Credit Framework
NOS	National Occupational Standard(s)
NQR	National Qualification Register
NSQF	National Skills Qualifications Framework
OJT	On the Job Training
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

Glossary

Term	Description
National Occupational Standards (NOS)	NOS define the measurable performance outcomes required from an individual engaged in a particular task. They list down what an individual performing that task should know and also do.
Qualification	A formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards
Qualification File	A Qualification File is a template designed to capture necessary information of a Qualification from the perspective of NSQF compliance. The Qualification File will be normally submitted by the awarding body for the qualification.
Sector	A grouping of professional activities on the basis of their main economic function, product, service or technology.
Long Term Training	Long-term skilling means any vocational training program undertaken for a year and above. https://ncvet.gov.in/sites/default/files/NCVET.pdf