NSDA Reference
To be added by NSDA

Revised Application Documentation: Version 5 /25 May, 2015

QUALIFICATION FILE – CONTACT DETAILS OF SUBMITTING BODY

Name and address of submitting body:

Electronics Sector Skills Council of India,

422, Okhla Industrial Estate, Phase – III, New Delhi - 110020

Name and contact details of individual dealing with the submission

Name: Rakesh Mathur

Position in the organisation: Senior Vice President

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List of documents submitted in support of the Qualifications File

1. Qualification Pack for Assembly Line Operator
2. Occupation Map
3. RFP for development of National Occupational Standards
4. Mapping of Manpower skills in IT Hardware and Electronics Industry – MAIT (2009)
   http://www.essc-india.org/Essc/reports/MAIT0Report2008_15711.pdf
5. Approval of QP/ NOSs
   a) Minutes of the meeting of GC
   b) Composition of the Technical Committee
6. ESSCI IMaCS LMIS Report
7. List of Companies and industry associations which participated in the development of these qualifications packs
8. Assessment Procedure – Assessing bodies and Assessor

QUALIFICATION FILE SUMMARY

Qualification Title:	Assembly Line Operator; ELE/Q4301
Body/bodies which will assess candidates	Electronics Sector Skills Council of India
Body/bodies which will award the certificate for the qualification.	Electronics Sector Skills Council of India
Body which will accredit providers to offer the qualification.	Electronics Sector Skills Council of India
Occupation(s) to which the qualification gives access	Assembly Operator: The Assembly Line Operator assembles together separate modules of the IT hardware equipment. The individual at work is responsible for assembling the different modules in the IT hardware to complete the product. The individual receives different electronic and electromechanical modules, fits and assembles them together. The operator may assemble multiple modules and/or products by following operating procedures for different models.
Proposed level of the qualification in the NSQF.	4
Anticipated volume of training/learning required to complete the qualification.	240
Entry requirements / recommendations.	12th pass, ITI
Progression from the qualification.	Assembly Line Operator, Line Engineer, Floor Supervisor
Planned arrangements for RPL.	Will be done at the place where required lab. Facility could be arranged.
International Comparability.	Not established.

Formal structure of the qualification

Title of unit or other component (include any identification code used)	Mandatory/ Optional	Estimated size (learning hours)	Level
ELE/N4301 Perform kitting of modules for assembling	Mandatory	70	4
ELE/N4302 Assemble modules to complete equipment	Mandatory	70	4
ELE/N9909 Coordinate with colleagues and co-workers	Mandatory	50	4
ELE/N9910 Maintain safe and secure work environment	Mandatory	50	4

Please attach any document giving further detail about the structure of the qualification – eg a Curriculum or Qualification Pack.
Give details of the document here:
Refer Page 1 for the list of attachments

SECTION 1

ASSESSMENT

Name of assessment body:
If there will be more than one assessment body for this qualification, give details.

- **Aspiring Minds**
- **Mettl**
- **IQAG**

Will the assessment body be responsible for RPL assessment? Yes.

Give details of how RPL assessment for the qualification will be carried out and quality assured.

RPL will be based on the same Qualification Pack and Assessment Criteria mentioned in the QP. The process of RPL assessment is under development.

Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, consistent and fair and show that these are in line with the requirements of the NSQF:

The emphasis is on practical demonstration of skills and knowledge based on the performance criteria. Assessment design team carries on research for understanding job details, followed with competencies mapping for the module and for the performance criteria. The assessment papers are created by the Subject Matter Experts and moderated by Assessment Designers of Assessment Partners as per the assessment criteria, for theory and practical questions considering the lab. facility available for the assessments. The Assessment Sets prepared by Assessment Partners are reviewed by ESSCI for consistency and match with the level of the QP.

The assessment partners are instructed to hire assessors with integrity, reliability and fairness and have them sign an agreement confirming confidentiality, no conflict of interest or any other position, which may compromise the quality of assessment. The assessors need to have adequate hands-on experience in the domain, preferably at a level above the position for which they conduct the assessment.
Assessors are trained on the assessment process, and the question set. At the time of the assessment, the assessors check the identity of the candidates with a photo identification card and attendance during the training. They also take snapshots photographs of the practical assessments, and get the attendance for the assessment signed off by the candidate.

Please attach any documents giving further information about assessment and/or RPL.
Give details of the document(s) here:

ASSESSMENT EVIDENCE

Complete the following grid for each grouping of NOS, assessment unit or other component as listed in the entry on the structure of the qualification on page 1.

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role	**Assembly Line Operator**
QP #	**ELE/Q4301**
Sector Skill Council	**Electronics Sector Skills Council of India**

Guidelines for Assessment:

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. Individual assessment agencies will create *unique question papers for theory part for each candidate at each examination/training center* (as per assessment criteria below)
4. Individual assessment agencies will create *unique evaulations for skill practical for every student at each examination/training center* based on this criteria
5. To pass the Qualification Pack , every trainee should score a minimum of 70% in every NOS
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

				Marks Allocation	
Element	**Performance Criteria**	**Total Marks (400)**	**Out Of**	**Theory**	**Skills Practical**
ELE/N4301 Perform kitting of modules for assembling					
Understanding work requirement	PC1. the daily targets on number of assemblies to be made	**100**	2		2
	PC2. the product and model for which the day work is assigned to		2	1	1
	PC3. the components and modules according to the bill of materials (BOM)		2	1	1
Receiving the components and modules	PC4. receive the electrical and electronic components		2	1	1
	PC5. receive the connectors, wires, cables and modules		2	1	1
	PC6. receive other accessories such as labels, cabinet, machine traveller sheet, etc., used in assembling process		2	1	1
	PC7. follow standard operating procedure while handling hardware modules such as handling PCB with ESD standards		2	1	1
	PC8. document the number of components and modules received from the stores and take sign off from stores department		2	1	1

	PC9. enter the inventory details in the internal process system as per company requirement example: SAP (ERP system)		2	1	1
	PC10. accurately read the bill of materials for the product		2		2
	PC11. maintain accurate documentation on the module and components received		2	1	1
Assembling the component	PC12. fix appropriately the components in the right slots without any error		3	1	2
	PC13. handle the components appropriately without any damage		2		2
	PC14. use and handle specific precision tools to mount the components / module without physical damage		2	1	1
	PC15. document all the components fixed in the standard procedure		2	1	1
Kitting the components and modules	PC16. understand all the modules required for assembling such as metal case for boxing, power supply, mother boards , other PCBs, displays, drivers, power supply, controllers, trays, fusers		2	1	1
	PC17. segregate the components, modules, box and accessories		2	1	1
	PC18. put them in different bins for assembling of an entire unit		2	1	1
	PC19. understand any specific instruction that need to be followed for assembling as per operating manual and circuit diagram or kitting sheet		2	1	1
	PC20. check for any possible mix up between different kitting requirements		2	1	1
	PC21. understand the handling procedure of different components and modules		2	1	1
	PC22. take anti static precautions before work and wear ESD wrist straps or aprons		2	1	1
	PC23. ensure that the number of modules or accessories are appropriately stocked		2	1	1
	PC24. record all the components and modules in the machine traveller sheet for tracking		2	1	1
	PC25. correctly identify all the modules and place them appropriately		2	1	1
	PC26. understand and arrange accurate number of modules and accessories required for one product		2	1	1
	PC27. avoid any mismatch and wrong count of modules during kitting		2	1	1
Assembling components	PC28. fix the processor appropriately on the sockets		2	1	1
	PC29. fix the RAM on in the sockets in motherboard		2	1	1

	PC30. fix other necessary modules such as video cards in their respective slots on the motherboard		2	1	1
	PC31. mount the cooling fan above the processor as per standard operating procedure (use thermal paste if required)		2	1	1
	PC32. assemble print head, components such as wire house, armature, bobbin		3	1	2
	PC33. stick necessary labels in appropriate places such as stickers of OEM, Manufacturer brand, product labels and product identification serial number labels		2	1	1
	PC34. use specified precision tools for assembling the components in the module		2	1	1
	PC35. document the process on machine traveller sheet after completion of each work for inspection		2	1	1
	PC36. enter the completed work in company's internal system		2	1	1
	PC37. effectively use appropriate tools to address specific issues		2	1	1
	PC38. follow standard safety procedures in handling hazardous tools		2	1	1
	PC39. maintain the tools appropriately to reduce damage or repair		2	1	1
	PC40. maintain zero-material defect during material handling by following standard operating procedure		2	1	1
Interacting with superior	PC41. understand the work requirement from superior, periodically		2	1	1
	PC42. report to superior on the work completed		2	1	1
	PC43. seek assistance from superior on specific module assembling and handling		2	1	1
	PC44. escalate the issues and problems that cannot be handled		2	1	1
	PC45. document the work completed on the company ERP software for tracking and future references		2	1	1
	PC46. achieve 100% on time completion of kitting as per productivity and assembling target		2	1	1
	PC47. carry out daily schedule as per instructions		2		2
	PC48. find technical solutions on specific issues		2	1	1
	PC49. report work status and prepare required documentation as per company standards		2	1	1
		TOTAL	100	45	55

ELE/N4302 Assemble modules to complete equipment					
Understanding work requirement	PC1. understand the daily targets on number of assemblies to be made		2	1	1
	PC2. understand the product and model for which the day's work is assigned to		2	1	1
Receiving modules to be assembled	PC3. ensure all the modules required for assembling is available in the kit		2	1	1
	PC4. read the machine traveller sheet and ensure that the components in mother board are fixed		2	1	1
	PC5. understand any specific instructions for handling modules or on assembling the equipment		2	1	1
	PC6. take anti static precautions before work and wear ESD wrist straps or aprons		2	1	1
	PC7. follow standard operating procedure while handling hardware modules such as handling PCB with ESD standards		2	1	1
	PC8. understand the time requirement to assemble different modules in an assembly line		2	1	1
	PC9. enter the inventory details in the internal process system as per company requirement example: SAP (ERP system)		2	1	1
Assembling of modules	PC10. follow the sequence for assembling for example: In CPU assembling for desktop, mother board, SMPS, Hard disk, Drivers, Wire connectors are assembled sequentially	**100**	3	1	2
	PC11. follow the standard assembling procedure for specific models of equipment		3	1	2
	PC12. ensure the module mounting, fitting, screws, wire connection are firm and is proper to meet the fitness requirement		3	1	2
	PC13. mount LED display and PCB wherever required in the casing		3	1	2
	PC14. place stickers and labels wherever applicable as per the product specification		3	1	2
	PC15. ensure that all labels are appropriately placed and none is left		3	1	2
	PC16. document after assembling of each module by mentioning the work done in the machine traveller sheet		3	1	2
	PC17. use the tools such as electric screw drivers to assemble the equipment		3	1	2
	PC18. assemble the components within the specified time in the moving assembly		3	1	2
	PC19. assemble all the modules firmly without damage		3	1	2
	PC20. ensure the wire connections are appropriate and not wrongly connected		3	1	2

	PC21. ensure that assembling is proper and no fall or movement of modules		3	1	2
	PC22. ensure no module and accessories are missed out in assembling		2	1	1
Completing box assembly	PC23. ensure all the inner modules (inside the casing) are assembled appropriately		2	1	1
	PC24. fit the frame or casing forming the outer cover for the equipment (usually made of steel, aluminium, plastic)		2	1	1
	PC25. fix them using screws and ensure firm closure of the case		2	1	1
	PC26. place labels and stickers of OEM and the manufacturer in the specified places in outer casing		2	1	1
	PC27. check for any loose bolts or improper assembling		2	1	1
	PC28. complete the assembling and document them in machine traveller sheet		2	1	1
	PC29. pass the equipment to next section after ensuring the assembly is proper		2	1	1
	PC30. assemble the box as specified within the specified time		2	1	1
	PC31. ensure all labels are appropriately placed and none are missed out		2	1	1
	PC32. check for complete assembly of all modules		2	1	1
	PC33. use tools as per standard operating procedure and avoid damage		2	1	1
	PC34. prevent any accidents while handling hazardous tools		2	1	1
	PC35. use appropriate tools for specific rework activity and achieve the results		2	1	1
	PC36. maintain zero-material defect during material handling by following standard operating procedure		2	1	1
Interacting with superior	PC37. understand the work requirement from superior, periodically		2	1	1
	PC38. report to superior on the work completed		2	1	1
	PC39. seek assistance from superior on specific module assembling and handling		2	1	1
	PC40. escalate the issues and problems that cannot be handled		2	1	1
	PC41. document the work completed on the company ERP software for tracking and future references		2	1	1
Achieving productivity and quality standards	PC42. achieve 100% on the daily target of number of assembled product		2	1	1
	PC43. meet the target of quality as per Service Level Agreement (SLA) and avoid rework		2	1	1

	PC44. rework within the turnaround time (TAT) and deliver them		2	1	1
		TOTAL	**100**	**44**	**56**
ELE/N9909 Coordinate with colleagues and co-workers					
Interacting with supervisor	PC1. understand and assess work requirements	**100**	7	3	4
	PC2. understand the targets and incentives		7	3	4
	PC3. understand new operating procedures and constraints		7	3	4
	PC4. report problems in the field		6	3	3
	PC5. resolve personnel issues		6	2	4
	PC6. receive feedback on work standards and customer satisfaction		6	2	4
	PC7. communicate any potential hazards at a particular location		7	2	5
	PC8. meet given targets		6	2	4
	PC9. deliver work of expected quality despite constraints		6	2	4
	PC10. receive positive feedback on behaviour and attitude shown during interaction		6	2	4
Coordinating with colleagues	PC11. interact with colleagues from different functions and understand the nature of their work		6	3	3
	PC12. receive spares from tool room or stores; deposit faulty modules and tools to stores		6	2	4
	PC13. pass on customer complaints to colleagues in a respective geographical area		6	2	4
	PC14. assist colleagues with resolving field problems		6	3	3
	PC15. resolve conflicts and achieve smooth workflow		6	3	3
	PC16. follow the company policy during cross functional interaction		6	3	3
		TOTAL	100	40	60
ELE/N9910 Maintain safe and secure work environment					
Following safety measures	PC1. comply with safety procedures followed in the company	**100**	7	3	4
	PC2. take adequate safety measures while handling hazardous materials or tools		7	3	4
	PC3. follow Electrostatic Discharge (ESD) precautions for electronic components		8	4	4
	PC4. escalate matters about hazardous materials or things found in the premises		8	4	4
	PC5. use safety materials such as gloves, goggles, masks, etc.		7	3	4
	PC6. take adequate safety measures while on work to prevent accidents		7	3	4

	PC7. ensure zero accidents in work		7	3	4
	PC8. avoid damage of components due to negligence in ESD procedures		7	3	4
	PC9. ensure no loss for company due to safety negligence		7	3	4
Participating in drills and workshops	PC10. participate in regular safety drills for being prepared in the event of a fire or natural calamity		7	2	5
	PC11. help others during the drill or calamity		7	2	5
	PC12. administer basic first aid		7	3	4
	PC13. participate in company organised games and fitness sessions such as yoga, etc.		7	2	5
	PC14. develop good posture for working so that long term health problems do not arise		7	2	5
		TOTAL	100	40	60

SECTION 2

EVIDENCE OF NEED

What evidence is there that the qualification is needed? **Feedback from the industry was collected with respect to the past and projected industry growth, projected employee growth during next 5 years (Refer to Pages 14 to 27 of the LMIS report), skill gaps identified in entry level qualified workforce for the sub-sector (Refer to Page 31 of the LMIS report), and current employment number for the qualification (Refer to Occupation Map). This enabled prioritization of the development of the qualification packs.**
What is the estimated uptake of this qualification and what is the basis of this estimate? **Estimated uptake of the qualification is obtained from the current employment (refer to the Occupation Map) times the projected employee growth for the sub-sector (Refer to Pages 21 to 27 of LMIS report). This is the basis for planning training with the industry and training providers.**
What steps were taken to ensure that the qualification(s) does/do not duplicate already existing or planned qualifications in the NSQF? **NSDC QRC team checks and confirms this.**
What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated? **Technical Committee's inputs are sought from time-to-time as needed to check the relevance of QP/ NOSs, and the revision exercise is undertaken, as needed.**

Please attach any documents giving further information about any of the topics above.
Give details of the document(s) here:
Refer Page 1 for the list of attachments

SECTION 3

SUMMARY EVIDENCE OF LEVEL

Level of qualification: 4

Summary of Direct Evidence (from learning outcomes):

Qualification Title and Classification Code: **Assembly Line Operator; ELE/Q4301**					
Process Required	**Professional Knowledge**	**Professional Skills**	**Core Skills**	**Responsibility**	**Level**
The individual must be able to fix appropriately the components in the right slots, handle the components appropriately without any damage, use and handle specific precision tools to mount the components / module without physical damage, ensure all the modules required for assembling is available in the kit, read the machine traveller sheet and ensure that the components in mother board are fixed, understand any specific instructions for handling modules or on assembling the equipment, take anti static precautions before work and wear ESD wrist straps or aprons, follow standard operating procedure while handling	**The individual on the job needs to know and understand basic electronics involved in the hardware, different types of IT hardware products and functionalities, functions of electrical and mechanical parts/ modules, identify different components in the module, the specific function of different modules for a equipment, the different models assembled in the plant and their requirement, handling specific expensive modules such as processors, hard disks, voltage and power requirement for different hardware devices, memory, input, output and storage devices, different modules in**	**The individual on the job needs to know and understand basics of different types of IT hardware equipment such as Desktop, Laptop, Printer, Scanner, Networking device, servers, EPABX, identify all the components and modules in the equipment they are assembling, component requirement for modules for specific equipment, operate computer and laptop and peripheral hardware, operate the different software, operate the internal ERP software to record material movement, completion of work, raise for spares, to use electronic screw**	**The individual on the job needs to know and understand how to read job sheet and document the completed work on material movement note, read the component requirement and identification of slots for any equipment, read assembling procedures for, document the completed work on material movement note, read the component requirement and identification of slots for any equipment and to read assembling procedures for different models Considering these outcomes, the job role is pegged at level 4.**	**The job holder must be able to Receive the components and modules from the stores, Bin or kit the components, modules and accessories, Assemble components in the module and Interact with supervisor. The individual must be able to Receive the modules to be assembled after kitting, Assemble the modules, Complete the product with box assembly The job holder is responsible for his own job and self-learning and no supervision of others and hence pegged at level 4.**	**4**

hardware modules such as handling PCB with ESD standards, understand the time requirement to assemble different modules in an assembly line, enter the inventory details in the internal process system Considering the repetitive nature, it is pegged at level 4.	**hardware equipment for example SMPS, drivers, hard disk, battery,mother board in case of a desktop, use of tools such as electronic screwdrivers, needle-nose pliers, etc, Electrostatic Discharge (ESD) and precautionary steps, achieve outputs required from the system and other hardware peripherals, achieve required quality standards Due the requirement of Factual knowledge of the job requirements, this is pegged at level 4**	**drivers for assembling and disassembling of modules, to use specific handling tools such as needle nose-pliers Since job holder is required to Recall and demonstrate practical skill, routine and repetitive using appropriate rule and tool, this is pegged at level 4**			

Summary of other evidence (if used):

SECTION 4

EVIDENCE OF RECOGNITION OR PROGRESSION

What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector?

Vertical mobility options are available in the Occupation map.

Please attach any documents giving further information about any of the topics above.
Give details of the document(s) here:
Refer Page 1 for the list of attachments