

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 Operator-TV
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](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

<b>Qualification Title:</b>	Assembly Operator-TV; ELE/Q3502		
<b>Body/bodies which will assess candidates</b>	Electronics Sector Skills Council of India		
<b>Body/bodies which will award the certificate for the qualification.</b>	Electronics Sector Skills Council of India		
<b>Body which will accredit providers to offer the qualification.</b>	Electronics Sector Skills Council of India		
<b>Occupation(s) to which the qualification gives access</b>	Assembly Operator TV: TV Assembly Operator assembles various parts of the television to produce the set. Key parts may vary depending on the type of television being manufactured, e.g., CRT, LCD, LED. The individual at work is responsible for fitting in the different modules of the television set into the frame using appropriate screws and connectors during the different stages of the assembly process. The individual is expected to minimise errors at every stage since the assembly line is continuously in motion		
<b>Proposed level of the qualification in the NSQF.</b>	4		
<b>Anticipated volume of training/learning required to complete the qualification.</b>	240		
<b>Entry requirements / recommendations.</b>	10th standard passed, ITI/Diploma (Electronics)		
<b>Progression from the qualification.</b>	Assembly Operator-TV , Line Supervisor, Line Process Auditor		
<b>Planned arrangements for RPL.</b>	Will be done at the place where required lab. Facility could be arranged.		
<b>International Comparability.</b>	Not established.		
<b>Formal structure of the qualification</b>			
<b>Title of unit or other component</b> (include any identification code used)	<b>Mandatory/Optional</b>	<b>Estimated size (learning hours)</b>	<b>Level</b>
ELE/N3508 Assemble CRT TV	Mandatory	70	4
ELE/N3509 Assemble Flat Panel Display (FPD) TV	Mandatory	70	4
ELE/N9902 Coordinate with colleagues	Mandatory	50	4
ELE/N9903 Maintain safe 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

<b>Job Role</b>	<b>Assembly Operator - TV</b>
<b>QP #</b>	<b>ELE/Q3502</b>
<b>Sector Skill Council</b>	<b>Electronics Sector Skills Council of India</b>

### **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 evaluations 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.

Element	Performance Criteria	Total Marks (400)	Out Of	Marks Allocation	
				Theory	Skills Practical
<b>ELE/N3508 Assemble CRT TV</b>					
<b>Understanding work requirements</b>	PC1. interact with the supervisor in order to understand the day's production requirement	<b>100</b>	5	2	3
	PC2. plan the day's production activities based on the feedback obtained from superior		5	2	3
	PC3. use appropriate drawings, job instructions or work manuals		5	2	3
<b>Assembling CRT TV set</b>	PC4. attach the speaker to the front cabinet of the television		5	2	3
	PC5. connect the auxiliary/speaker PCB to the system		5	2	3
	PC6. fit the colour picture tube on to the assembled sub system		5	2	3
	PC7. wire the degaussing coil and the earth connection to the assembled system		5	2	3
	PC8. connect the main PCB to this assembly		5	2	3
	PC9. make necessary adjustments such as white balance adjustment, audio video tests, etc.		5	2	3
	PC10. attach the back cover and pass the sub system on for packaging		5	2	3
	PC11. interpret accurately the drawings, wiring and job specifications/instructions		5	2	3

	PC12. ensure that consumables and components are available in usable condition		5	2	3
	PC13. ensure that the finished assembly meets the required specifications		5	2	3
<b>Reporting to supervisor</b>	PC14. highlight any errors in previous step of the assembly process identified		6	2	4
	PC15. report defective or inadequate number of components		6	2	4
	PC16. report about inadequate quantity of consumables such as screws, nuts, etc		5	2	3
<b>Achieving productivity, quality and safety standards</b>	PC17. meet 100% target for number of products to be manufactured per day		2	1	1
	PC18. achieve 100% of planned work as scheduled		2	0	2
	PC19. achieve zero errors as per company's standards		2	1	1
	PC20. achieve zero damager because of electrostatic discharge		2	1	1
	PC21. keep work area clean and organised identify		2	1	1
	PC22. report any problems in the assembly line in time		2	1	1
	PC23. record any defects/inadequacies noted during the assembly process		2	1	1
	PC24. maintain safety standards as per company policy		2	1	1
	PC25. achieve clean work protocols		2	1	1
			<b>100</b>	<b>40</b>	<b>60</b>
<b>ELE / N3509 Assemble Flat Panel Display (FPD) TV</b>					
<b>Understanding work requirement</b>	PC1. interact with the supervisor in order to understand the day's production requirement		4	2	2
	PC2. plan the day's production activities based on the feedback obtained		4	2	2
	PC3. use appropriate drawings, job instructions or work manuals		4	2	2
	PC4. check availability of components and modules required for completing the assembly		4	2	2
<b>Assembling the LCD/LED TV</b>	PC5. fix by inserting necessary screws into the chassis before placing the back light screen		6	2	4
	PC6. place the back light screen on the chassis	<b>100</b>	6	2	4
	PC7. assemble the main PCB, the power supply board and the LED driver to form the mother board		7	3	4
	PC8. connect the speaker to the mother board		6	2	4
	PC9. connect the electronic sub assembly to the already assembled sub system		6	2	4
	PC10. place the front screen on the frame and attach the same to the sub assembly		7	3	4
	PC11. ensure that the finished assembly meets the required specification		6	2	4

	PC12. select right tools for securing fastenings, assembling sub units, connectors and allied devices		6	2	4
<b>Reporting to superior</b>	PC13. highlight any errors in previous step of the assembly process		6	2	4
	PC14. report defective or inadequate number of components		6	2	4
	PC15. report in time about inadequate quantity of consumables such as screws, nuts, etc.		6	2	4
<b>Achieving productivity, quality and safety standards</b>	PC16. achieve 100% work planned for the day as per schedule		2	1	1
	PC17. meet the target number of products to be manufactured per day		2	1	1
	PC18. achieve zero errors in assembly as per company policy		2	1	1
	PC19. use grounded wrist straps and other electrostatic precautions as applicable		2	1	1
	PC20. keep work area clean and organised identify and report any problems in the assembly line in time		2	1	1
	PC21. record any defects/inadequacies noted during the assembly process		2	1	1
	PC22. complete work without hazards		2	1	1
	PC23. follow clean work protocols		2	1	1
		<b>TOTAL</b>	<b>100</b>	<b>40</b>	<b>60</b>
<b>ELE/N0002 Coordinate with colleagues</b>					
<b>14</b>					
<b>Interacting with supervisor</b>	PC1. understand work requirements, targets and incentives	<b>100</b>	5	2	3
	PC2. receive work order/job instruction from the supervisor on time		6	3	3
	PC3. understand new operating procedures		6	3	3
	PC4. report problems encountered in the assembly process		6	2	4
	PC5. resolve personnel issues		6	2	4
	PC6. receive feedback on work standards and operating procedure		6	2	4
	PC7. communicate any potential hazards at work location		6	2	4
	PC8. meet given targets and deliver work of expected quality despite constraints		6	2	4
	PC9. highlight any errors in previous step of the assembly process		6	2	4
	PC10. report in time about shortage of consumables		5	2	3
<b>Interacting with colleagues</b>	PC11. receive consumables/tools from tool room or stores		7	3	4
	PC12. report defective or inadequate number of components		7	3	4
	PC13. deposit faulty modules and tools to stores		7	3	4

	PC14. communicate to colleagues errors identified in any step of the assembly process		7	3	4
	PC15. assist colleagues in any problems identified in their work process		7	3	4
	PC16. resolve conflicts and achieve smooth workflow		7	3	4
		<b>TOTAL</b>	<b>100</b>	<b>40</b>	<b>60</b>
<b>ELE/N0003 Maintain safe work environment</b>					
<b>Following safety measures and standards</b>	PC1. comply with general safety procedures followed in the company	<b>100</b>	7	3	4
	PC2. follow standard safety procedures while handling an equipment, hazardous material or tool		8	4	4
	PC3. use of safety materials such as goggles, gloves, ear plugs, caps, ESD pins, covers, shoes, etc.		7	3	4
	PC4. escalate about any hazardous materials or things found in the premises		7	3	4
	PC5. report about any breach of safety procedure in the company		7	3	4
	PC6. ensure zero accidents at work		7	3	4
	PC7. avoid damage of components due to negligence in ESD procedures		7	3	4
	PC8. regularly participate in fire drills or other safety related workshops organised by the company		7	3	4
	PC9. ensure no loss for company due to safety negligence		7	3	4
<b>Maintaining good health and posture</b>	PC10. maintain appropriate posture, especially in long hours of sitting or standing position and in handling heavy materials		12	4	8
	PC11. Participate in company organised health sessions such as yoga, physiotherapy or games		12	4	8
	PC12. handle heavy and hazardous materials with care and using appropriate tools and handling equipment such as trolleys, jacks and ladders		12	4	8
		<b>TOTAL</b>	<b>100</b>	<b>40</b>	<b>60</b>

## 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: <b>Assembly Operator-TV; ELE/Q3502</b>					
Process Required	Professional Knowledge	Professional Skills	Core Skills	Responsibility	Level
<p>The individual must be able to attach the speaker to the front cabinet of the television, connect the auxiliary/speaker PCB to the system, fit the colour picture tube on to the assembled sub system, wire the degaussing coil and the earth connection to the assembled system, connect the main PCB to this assembly, make adjustments such as white balance adjustment, audio video tests, etc., attach the back cover and pass the sub system on for packaging, interpret accurately the drawings, wiring and job specifications/</p>	<p>The individual on the job needs to know and understand mechanical assembly instructions, general principles of wiring and assembly, methods used and purpose of each, circuit knowledge, block diagram of CRT TV and functioning of its different modules, fundamentals of electricity such as Ohms law, difference between Ac and DC, series and parallel connections, basic electronics of components such as diode, transformer, LED, photo transistor, capacitor,</p>	<p>The individual on the job needs to know and understand how to operate/use screw driver, ratchets, spring driver, speciality wrenches, inspection fixtures, wire cutter, pliers, tester, spanner, CRO, multi meter, and use tools safely. The jib holder must know how to assemble electron guns, focussing and deflection coils, anode connections and phosphor layering achieve the required picture quality and overall quality standards. Since he is required to Recall and demonstrate practical skill,</p>	<p>The individual on the job needs to know and understand how to read warnings, instructions and other text material on product labels, components, etc.; read job sheets, work orders and instructions manual and read technical schematics in order to carry out assembling operation. Considering these outcomes, the job role is pegged at level 4.</p>	<p>The job holder is responsible for Understand requirement from the supervisor, Assemble the CRT TV, Report problems to supervisor, Achieve productivity, and quality and safety standards as per company's policy. He should be able to about communicate with colleagues and seniors in order to achieve smooth work flow. The job holder is responsible for his own job and self-learning and no supervision of others and hence pegged at level 4.</p>	4

<p>instructions, ensure that consumables and components are available in usable condition, ensure that the finished assembly meets the required specifications, inspect aesthetics of front cabinet. Considering the repetitive nature, it is pegged at level 4.</p>	<p>resistor, inductor, thermistor, how to read values of resistors, capacitors, diodes and integrated circuits with specific reference to colour coding, polarity, orientation, tolerance, specific safety precautions that need to be taken while working in an electronic assembly unit, personal protective equipment/gear such as gloves, rubber base shoes etc. to be worn while carrying out wiring activities, selection and maintenance of various tools used during the assembly process, television receiver fundamentals and CRT basics, frequently occurring errors in the assembly process, causes and preventive measure Due the requirement of Factual knowledge of the job</p>	<p>routine and repetitive in narrow range of application, using appropriate rule and tool, using quality concepts, this is pegged at level 4</p>			
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	requirements, this is pegged at level 4				
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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 attachment**