



Europa Liit  
Euroopa Sotsiaalfond



Eesti tuleviku heaks



SIHTASUTUS  
Kutsekoda

ESF programm „Kutsete süsteemi arendamine“

## OCCUPATIONAL STANDARD

### Electronic equipment assembler, level 2

The occupational standard **Electronic equipment assembler of level 2** forms the basis for the compilation of curricula for the in-service training and for the assessment of the competence of persons when awarding occupational qualification.

Occupational qualification title	Level of the Estonian Qualification Framework (EQF)
Electronic equipment assembler, level 2	2

Partial occupational qualifications and occupational qualification titles on the occupational qualification certificate	
Title of partial qualification	Level of the Estonian Qualification Framework (EQF)
Electronic equipment assembler, level 2	2
Cable assembling machine operator, level 2	2

## Part A

### JOB DESCRIPTION

<b>A.1 Job description</b>
<p>The professional field of the electronic equipment assembler consists of three occupational qualifications: electronic equipment assembler of level 2, formed of two partial qualifications; electronic equipment assembler of level 3, formed of two partial qualifications and one field of specialisation and electronic equipment technician of level 4.</p> <p>Electronic equipment assemblers usually work in industrial enterprises where electronic assemblies or products containing them are made and put together.</p> <p><b>The objective of the work of electronic equipment assembler of level 2</b> is the production of wiring and cable ties (hereinafter cable assemblies) and/or electronic assemblies according to the specified documentation and instructions primarily for the manufacture of series production.</p>
<b>A.2 Units</b>
<p>The occupational qualification of the electronic equipment assembler of level 2 includes two units.</p> <p>A.2.1 Manufacture of electronic assemblies and detection of visual faults; A.2.2 Manufacture of cable assemblies and detection of visual faults.</p> <p>It is possible to apply for the occupational qualification of the electronic equipment assembler of level 2 and to certify it in parts as follows: <u>Electronic equipment assembler</u> of level 2, partial occupational qualification; <u>Cable assembling machine operator</u> of level 2, partial occupational qualification.</p> <p>A list of tasks “Units and tasks” related to the units is presented in Annex 1 to the Occupational Standard.</p>
<b>A.3 Working environment and specific aspects of work</b>
<p>The electronic equipment assembler works indoors in premises conforming to special requirements where the wearing of special work clothes may be required. Specific aspects of work may be working with small components that presuppose good vision and distinguishing between colours. The electronic equipment assembler may also come into contact with chemicals in his/her work.</p>
<b>A.4 Tools</b>
<p>The main tools of the electronic equipment assembler include mechanical and electrical hand tools, electrical measuring instruments, computer controlled equipment (incl. test equipment), accessories meant for the manufacture of the assembly (e.g. assembly fixtures, etc.), computers and technical documentation, as well as normative documents (standards, instructions).</p>
<b>A.5 Personal characteristics necessary for this job: abilities and personal traits</b>
<p>The work of the electronic equipment assembler presupposes routine tolerance, precision of movements and good vision, including distinguishing between colours.</p>
<b>A.6 Occupational training</b>
<p>People who have obtained their occupational skills in the workplace, during the in-service training or vocational training usually work as electronic equipment assemblers of level 2,</p>
<b>A.7 Possible job titles</b>
<p>The possible job titles for the electronic equipment assembler are assembly operator, operator, fitter</p>



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and assembler.

## Part B

### COMPETENCE REQUIREMENTS

#### B.1. The structure of the occupational qualification

In applying for the occupational qualification of the electronic equipment assembler, the certification of competencies B.2.1-B.2.2 and B.2.3 (transversal competence) is required.

In applying for partial occupational qualification of the electronic equipment assembler of level 2 the certification of competencies B.2.1 and B.2.3 is required.

In applying for the partial occupational qualification of the cable assembling machine operator of level 2 the certification of competencies B.2.2 and B.2.3 is required.

#### Assessment method(s):

The content and the form of conduct of the final work or final examination will be approved by the occupational qualifications committee.

The competences required from the electronic equipment assembler are assessed at the examination in compliance with the requirements of the international standard IPC-A.610\*.

The competences required from the cable assembling machine operator are assessed at the examination in compliance with the requirements of the international standard IPC-A.620.

\*IPC standards –quality criteria for the manufacture of electronics assemblies.

#### B.2 Competences

B.2.1 Manufacture of electronic assemblies and detection of visual faults			EQF level 2
Description	Supporting knowledge	Skills	
Assembles the electronics assemblies in accordance with the work instruction, based on the quality criteria set for the assembly and the requirements of the standard IPC-A-610 or any other equivalent standard.	a) Knows the quality criteria of the standard IPC-A-610 or any other equivalent standard concerning the electronic assemblies, as well the names of electronic components; b) Knows the principles of manual soldering.	a) Follows the work instruction and proceeds from the quality criteria concerning the electronic assemblies of the standard IPC-A-610 or any other equivalent standard; b) Uses different tools used for manual soldering.	

B.2.2 Manufacture of cable assemblies and detection of visual faults			EQF level 2
Description	Supporting knowledge	Skills	

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<p>Assembles the cable and conductor ties or assemblies in accordance with the work instruction, bases on the quality criteria set for the assembly and the requirements of the standard IPC-A-620 or any other equivalent standard.</p>	<p>a) Knows the quality criteria of the standard IPC-A-620 or any other equivalent standard concerning the cable assemblies, as well as the names of cable components; b) Knows the technologies of cable and conductor ties or assemblies.</p>	<p>a) Follows the work instruction and proceeds from the quality criteria concerning the cable assemblies of the standard IPC-A-620 or any other equivalent standard; b) Uses different hand tools used for slicing of different cables.</p>
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**TRANSVERSAL COMPETENCIES**

<p><b>B.2.3 Electronic equipment assembler, occupational qualification transversal competence of level 2</b></p>	<p><b>EQF level 2</b></p>
<p><u>Performance indicators:</u></p>	
<p>1) Observes the work process, follows and maintains the quality and productivity; 2) Uses one's working area purposefully and keeps it in order (5S principles); uses materials and work equipment prudently and economically; 3) Uses terminology of the area of specialisation, understands and meets the requirements proceeding from the instruction documents; 4) Participates in the teamwork; 5) Observes the requirements of the working environment and the work safety (incl. waste sorting), using protective equipment for occupational health and safety and safe operating techniques as well as following the principles of ergonomics.</p>	
<p><u>Supporting knowledge:</u></p> <p>1) 5S principles; 2) ESD principles; 3) RoHS principles; 4) Requirements for the working environment and the work safety; 5) Principles of ergonomics; 6) Principles of waste handling.</p>	
<p><u>Assessment method(s):</u> Assessment of the transversal competence is integrated within other competences of this occupational standard.</p>	
<p><u>Clarification</u> 5S principles – purposeful use and maintenance of the workplace as well as ensuring that it also remains like this (sort, put in order, systematic cleaning, standardise, preserve). ESD principles – protection of products and electronic components and equipment against static electric discharges. RoHS – the European Union Directive on the restriction of the use of certain hazardous substances.</p>	

## Part C

### GENERAL INFORMATION AND ANNEXES

<b>C.1 Information on the preparation and approval of the occupational standard, on the body awarding occupational qualifications, and reference to the location of the occupational standard in classifications</b>	
1. Designation of the occupational standard in the register of occupational qualifications	08-30112012-3.1/1k
2. The occupational standard is compiled by: names of persons and organisations	Kalmer Kand, <i>Enics Eesti AS</i> Priit Kinks, <i>Rantelon OÜ</i> Arno Kolk, <i>Elektroonikatööstuse Liit</i> Andzei Kuznets, <i>Ericsson Eesti AS</i> Polina Lapõševa, <i>Ericsson Eesti AS</i> Milko Milatskov, <i>Stoneridge Electronics AS</i> Andres Ojalill, <i>Tallinna Polütehnikum</i> Eiko Priidel, <i>Teleplan Estonia OÜ</i> Mihkel Viskus, <i>Incap Electronics Estonia OÜ</i>
3. The occupational standard is approved by:	Sectoral Council for Information Technology and Telecommunications
4. No. of the decision of the Sectoral Council	11
5. Date of the decision of the Sectoral Council	30.11.2012
6. The occupational standard is valid until (date)	29.11.2017
7. Occupational standard version No. (1-n)	1
8. Reference to the Classification of Occupations (ISCO 08)	7. Main group “Skilled staff and craft workers”, code 724
9. Reference to the level in the European Qualifications Framework (EQF)	2
<b>C.2 Title of occupational qualification in foreign languages</b>	
In English: Electronic equipment assembler	
In Russian: Сборщик электронных устройств	
<b>C.3 Annexes</b>	
Annex 1 Units and tasks	

	Units and tasks	Electronic equipment assembler, level 2 / Cable assembly machine operator, partial occupational qualification of level 2 The objective of work is the make of cable assemblies and/or electronics assemblies in accordance with specified documentation and instructions.	Electronic equipment assembler, level 2 / Assembler of electronic equipment assembly (module), partial occupational qualification of level 2 The objective of work is the make of electronic assembly (module) in accordance with specified documentation and instructions.	Electronic equipment assembler, level 3 The objective of work is the make and repair of electronic assemblies in accordance with specified documentation.	Electronic equipment technician, level 4 The objective of work is the make, setup and repair of electronic assemblies and troubleshooting in the range of the whole production process according to specified documentation both in series production as well as manufacture of small-lot production and prototypes.
<b>1</b>	<b>Use of measuring instruments for testing</b>	<b>EQF level 2</b>	<b>EQF level 2</b>	<b>EQF level 3</b>	<b>EQF level 4</b>
<b>1</b>	Use of measuring instruments needed for work				x
<b>2</b>	Calibration of measuring instruments, test equipment and systems as well as tools, if necessary.				x
<b>2</b>	<b>Assembly of electronic equipment</b>	<b>EQF level 2</b>	<b>EQF level 2</b>	<b>EQF level 3</b>	<b>EQF level 3</b>
	<b>Description</b>	<b>Makes cable or conductor ties or assemblies in accordance with the requirements of the standard IPC-A-620 or any other equivalent standard.</b>	<b>Makes electronics assemblies in accordance with the requirements of the standard IPC-A-610 or any other equivalent standard</b>		
<b>1</b>	Performance of manual soldering				x
<b>2</b>	Observance and application of the requirements of standards IPC J-STD-001, IPC-A-610 and IPC-A-620 or any other equivalent standard				x
<b>3</b>	Use of tools used in manual soldering and in other assembly processes				x
<b>4</b>	Handling and preparation for soldering of electronic components and materials				x

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5	Preparation and connecting the cable and conductor ties or assemblies				X
6	Reading of wiring diagrams				X
3	<b>Manufacture of electronic assemblies and detection of visual faults</b>	<b>EQF level 2</b>	<b>EQF level 2</b>	<b>EQF level 3</b>	<b>EQF level 4</b>
1	Performance of manual soldering			X	
2	Mechanical assembly of electronic assemblies			X	
3	Observance and application of the requirements of standards IPC J-STD-001, IPC-A-610 and IPC-A-620 or any other equivalent standard		X	X	
4	Use of tools used in manual soldering and in other assembly processes		X	X	
5	Handling and preparation for soldering of electronic components and materials			X	
6	Visual detection of possible faults in electronic assemblies			X	
7	Identification of faulty assemblies			X	
4	<b>Manufacture of cable assemblies and detection of visual faults.</b>	<b>EQF level 2</b>	<b>EQF level 2</b>	<b>EQF level 3</b>	<b>EQF level 4</b>
1	Mechanical assembly of cable and conductor ties or assemblies			X	
2	Preparation and connecting the cables and cable assemblies			X	
3	Observance and application of the requirements of standards IPC J-STD-001, IPC-A-610 and IPC-A-620 or any other equivalent standard	X		X	





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4	Performance of manual soldering			X	
5	Use of tools used in manual soldering and in other assembly processes	X		X	
6	Visual assessment of the conformity of components to the requirements set for the cable assemblies			X	
7	Identification of damaged cable assemblies			X	
5	<b>Repair of electronic equipment</b>	<b>EQF level 2</b>	<b>EQF level 2</b>	<b>EQF level 3</b>	<b>EQF level 4</b>
1	Observance and application of the requirements and instructions of standards IPC 7711 and 7721 or any other equivalent standards			X	X
2	Use of tools needed for the repair of electronic equipment			X	X
6	<b>Documentation of the work process.</b>	<b>EQF level 2</b>	<b>EQF level 2</b>	<b>EQF level 3</b>	<b>EQF level 4</b>
1	<b>Documentation of activities</b>	<b>transversal</b>	<b>transversal</b>	<b>reflects in transversal</b>	X