



9th International  
Abilympics  
Bordeaux 2016

# Vocational Skills Contest

## V36 Electronic Assembly (Advanced Course)

### 1. Task Assignment

The task consists in assembling a digital echo chamber, to be used with audio systems or karaoke systems, or simply for fun.

Contestants will:

- Prepare their work station and check all of the provided components.
- Assemble the device following instructions to be provided on the day of the competition.
- Control their work and fill out the self-correction sheet on annex n°1 before turning on the device.
- Measure, analyze and identify the correct oscillogram on annex n°2.
- Identify the problem and circle the defective element on annex n°3.

Annexes n°1, 2 and 3 will be provided along with assembly instructions on the day of the competition.

### 2. Allocated time: 4h30

4 hours and 30 minutes of competition.



### 3. Requirements

- Contestants must respect the safety rules and the jury's instructions.
- They will maintain a clean and organized work station during the competition.
- It is each contestant's responsibility to bring all the necessary tools and equipment referenced in chart n°6. The organization will not be able to provide them.
- Any contestant caught cheating, talking to someone from the public or using a communication device will suffer a penalty of 5 points for the first transgression. A second transgression will lead to an exclusion from the contest.

### 4. Procedure

**Day -1 (March 24<sup>th</sup>):** On the day before the competition, contestants will be welcomed by members of the jury. A briefing about the organization of the competition will be organized. Contestants will draw lots to be assigned to a work station, where they may drop off their tools.

**Day 1 (March 25<sup>th</sup>):** Contestants will have 4 hours and 30 minutes to complete the task.

**Day 2 (March 26<sup>th</sup>):** Contestants will go on an organized trip.










## 5. List of the provided equipment

*Non-exhaustive list.*










N°	Equipment	Photo	Qty per contestant	Notes
01	MK182 – VELLEMAN digital echo chamber		1	Ref. 1800-39
02	Third hand		1	Ref. VTHH3
03	Solder wick		1	
04	9-volt battery		1	
05	Desoldering pump + soldering iron		1	
06	Soldering iron stand with sponge		1	
07	Solder wire		1	1mm
08	Small loudspeaker		1	8Ω
09	Screw		4	Ø3, length 20
10	M3 hex nut		4	
11	Flat washer		4	Ø3
12	External tooth lock washer		4	Ø3



## 6. List of tools to be brought for each contestant

N°	Tools	Photo	Qty	Notes
01	Cutting pliers		1	
02	Half-round nose pliers		1	
03	Ruler, several colors of pens, pencils, eraser...		1	Equipment used for writing
04	Safety glasses		1	
05	Flat-head screwdrivers		1 set	
06	Toolbox		1	Contestant's personal equipment, to be verified by the jury
07	Headlamp		1	
08	Professional clothing		1	Contestant's choice
09	Safety shoes		1 pair	Contestant's choice

## 7. List of facilities installed at the contest site

N°	Equipment	Photo	Specifications	Qty	Notes
01	Power strip		For plugging two measuring devices, a soldering iron, a possible lamp	1	
02	Function generator			1	
03	Oscilloscope			1	
04	Black test leads			3	
05	Red test leads		For frequency generator output and for the two oscilloscope inputs	3	
06	BNC-banana adapter		For frequency generator output and for the two oscilloscope inputs	3	
07	Multimeter with its two probes		For measuring continuity, resistance and voltage	1	
08	Table		75 cm × 180 cm	1	
09	Chair			1	

## 8. Evaluation Criteria



N°	Items to be evaluated	Scoring scale
01	The device and its microphone work : YES / NO	2
02	Potentiometers are operational when speaking into the microphone : YES / NO	2
03	Polarities are respected: -1 point per mistake. 3 mistakes = 0	3
04	Quality of the soldering	15
05	Resistors are read correctly (reading the other elements will be easy)	10
06	Respect of the height of components on the printed circuit	2
07	Measuring devices are properly connected following the technical specifications	4
08	Accuracy of the measuring devices' wiring	8
09	Measurement at 20 HZ	15
10	Measurement at 20 KHZ	15
11	Analysis of the measurements	6
12	Accuracy of the diagnosis	8
13	Identification and fixing of the problem	10
	<b>Total</b>	<b>100</b>